



Digitized by the Internet Archive
in 2011 with funding from
University of Toronto

THE
DENTAL RECORD:

A
MONTHLY JOURNAL
OF
DENTAL SCIENCE, ART, AND LITERATURE,

DEVOTED TO THE INTERESTS OF THE PROFESSION.

EDITED BY
W. H. DOLAMORE, L.R.C.P., M.R.C.S., L.D.S.

VOL. XVIII.

JANUARY-DECEMBER, 1898.

PUBLISHED BY
THE DENTAL MANUFACTURING COMPANY, LIMITED,
6 to 10, LEXINGTON STREET, LONDON, W.;
AND
MANCHESTER AND DUBLIN.

TH

INDEX.

	PAGE
Abscess in teeth with Living Pulps	520
Albert, H. L., on " Sulpho-Cyanide of Potassium in Saliva " ...	118
" Anæsthesia, Method of Prolonging," by Alfred Coleman ...	254
" Anæsthetics, Debatable Points in," by W. H. Gilmour ...	55
Anæsthetics, Responsibility in Administering	234
" Ankylosis of Human Teeth to the Jaws," by Storer Bennett...	549
" Antrum, Catarrh of," by W. R. Ackland	253
Antral Empyema with Ear Complication	205
Arsenic in Cements... ..	405
Artificial Nose, to Make	463
" Bacteriology of the Mouth," by K. Goadley	364
Baker, A. W., Presidential Address	489
Baldwin, H., Presidential Address... ..	97
Bennett, Storer, on " Ankylosis of Human Teeth to the Jaws " ...	549
Bönnecken, H., on " New Methods of Treating Diseased Pulps " ...	158
Bright, C. S., on the " Dental Status in Italy "	297
British Dental Association, Annual Meeting	301
Carden, A. C., on " Sensitive Dentine "	7
" Cataphoresis," by A. B. Wolfenden	246
Cement for Bridge Work	323
Cement for Broken Casts	239
Charing Cross Hospital, Prize Distribution	379
Chloroform in Dental Surgery	15
Coagulants, the Diffusibility of	141
Coagulants, Why they Diffuse through Dentine... ..	529
College of Surgeons, Edinburgh, Pass List	369
College of Surgeons, England, Pass List... ..	20, 259, 321
College of Surgeons, Ireland, Pass List	259
Corundum, Artificial	83

	PAGE
Colyer, J. F., on "Formaldehyde"	173
"Cysts of the Mouth," by O. C. Penfold... ..	104
Death Due to Hæmorrhage	506
Death Due to Meningitis following Eruption of Wisdom Tooth	508
Death from Hæmorrhage after Removal of Adenoids	140
Death from Pyæmia following Attempt at Tooth Extraction ...	359
Death from Swallowing False Teeth	186
Death under Chloroform	127, 399
Deformities of Jaws	90
Dechemant, Dubois... ..	325
"Dental Cysts," by J. G. Turner	313
Dental Drill, History of	462
"Dental Ethics," by W. H. Waite	537
Dental Hospital, Birmingham, Annual Meeting	78
Dental Hospital, Edinburgh, Prize Distribution... ..	374
Dental Hospital, Edinburgh, Prize List	410
Dental Hospital, Glasgow, Annual Meeting	184
Dental Hospital, Liverpool, Annual Meeting	82
Dental Hospital of London, Annual Meeting	187
Dental Hospital of London, Dinner	43
Dental Hospital, London, Prize Distribution	371
Dental Hospital, Manchester, Annual Meeting	128
Dental Hospital, National, Dinner	39, 563
Dental Hospital, National, Prize Distribution	190
Dental Literature, The Dawn of Modern	387
Dentistry in Foreign Countries	219
"Die Moulding Flask and Swager," by J. H. Gartrell ..	441
"Diseased Pulps, New Methods of Treating," by H. Bönnecken	158
Dolamore, W. H., on "Swelling of Submaxillary Glands Due to Pressure"	393
"Dolor Post Extrationem Dentis," by A. Scheuer	494
"Dummy Patient," by Geo. Cunningham	249
EDITORIALS—	
"A Curious Mind"	511
"A Dentist in the Medical Council"	261
"An Inexpedient Letter"	120

EDITORIALS—*continued*.

PAGE

"Dental Representative on Medical Council"	74
"Formaldehyde Cements"	181
"Haggis"	563
"Pyæmia Due to Dirty Teeth"	370
"School Dinners"	22
"Scientific Research"	396
"Written Agreements"	217
'Empyema of Antrum,' by Dr. Permewan	499
Erosion	237
Erosions	323
Essential Oils, Antiseptic Value	472
Excision of Roots	63
Fairbank, J., Presidential Address	546
Fletcher, T., on Smith's "Dental Metallurgy"	294
Formaldehyde	131
Formaldehyde in Solid Form	136
"Formaldehyde in Treatment of Pulps," by J. F. Colyer	173
"Formalin," by Boyd Wallis	175
Formalin in Alimentary Products... ..	180
Fracture of Teeth, Restoration with Porcelain	513
Fraudulent Degrees... ..	88
Frontal Sinus and Antrum, Communication	125
Gartrell, J. H., on a "New Die Moulding Flask and Swager"	441
"Gas and Ether," by William Guy	351
Gelatine as a Blood Coagulant	126
Gilmour, W. H., on "Debatable Points in Anæsthetics"	55
Glass, to drill	322
Goadby, K., on "Bacteriology of the Mouth"	364
Gold Filling, Some Minor Details in	457
"Gutta-percha in Conservative Dentistry," by W. Rushton	206
Guy, William, on "Gas and Ether"	351
Guy's Hospital, Prize Distribution	376
Healing Processes of the Dental Pulp	319
Hilliard, H., on "Prolonging Nitrous Oxide Anæsthesia"	145
Hunt, W. A., Presidential Address	303
Huxley Lecture	468

Infusorial Earths	464
"Italy, Dental Status in," by C. S. Bright	297
Japanese Dental Art	518
Jeffrey, Louis, on "Porcelain Inlay for Approximal Cavities" ...	358
Jenkins, M. S., on "Porcelain Enamel for Inlays and Pivot Teeth"	345
Jones, J. H., on "Vulcanite and Vulcanizing"	1

LEGAL—

British Dental Association <i>v.</i> Herbert Manning	465
Fletcher <i>v.</i> Goodman	290
Hamilton <i>v.</i> Bairstow	185
Hirst <i>v.</i> Oglesby, of Barnsley	292
Kay <i>v.</i> Butterfield	504
Jones <i>v.</i> Lukyn	397
South Kensington Ladies' Dental Association <i>v.</i> Pegden ...	77
South Wales Dental Association <i>v.</i> C. K. Charles	466
Mansell, T., "Stray Thoughts"	151
"Matrices, Notes on," by W. de C. Prideaux	200
Medical Council, Dental Business	23, 262, 569
Metals Used in Antiquity	137
Modelling Wax	240
Mule Dentistry	385
"My Dentist," by L. H. B.	510
Necrosis Due to Phosphorus	506
"Nitrous Oxide Anæsthesia, Method of Prolonging," by Harvey Hilliard	145
"Nitrous Oxide Anæsthesia, Method of Prolonging," by W. J. McCardie	401
"Notes on Extraction of Teeth," by E. J. M. Phillips	193
"Odontoblasts, Notes on," by A. L. Whitehouse	247
Odontological Society of Great Britain— 11, 63, 111, 171, 205, 252, 360, 546	
Odontological Society, Liverpool District	70, 179, 461, 496, 554
Odontome, Composite	13

	PAGE
Penfold, O. C., on "Cysts of the Mouth"	104
Phillips, E. J. M., on "Extraction of Teeth"	193
Platinum, New Method of Fusing	515
Polishes for Metal	84
"Porcelain Enamel for Inlays and Pivot Teeth," by M. S. Jenkins... ..	345
"Porcelain Inlay for Approximal Cavities," by L. Jeffery	355
Porter, F. C., on "Treatment of Inaccessible Roots"	543
Prideaux, W. de C., on "Mtrices"	200
Proverbs, Dental	96
Pyorrhœa Alveolaris	380

REVIEWS—

Amoëdo's "L'Art dentaire en Médecine Légale"	582
Barrett's "Oral Pathology and Practice"	486
Black's "Descriptive Anatomy of the Human Teeth"	240
Martinier's "Clinique de Prothèse"	293
Samsoe's "Treatise on Plateless Dentures"	409
Pearsall's "Mechanical Practice of Dentistry"	407
Root-Canal Filling	534
Rubber Dam, to Remove Odour	83
Rushton, W., on "Autta-percha"	206

Saliva, Action of bacteria	192
Scurvy of Gum	400
"Sensitive Dent," by A. E. Carden	7
Smith, S. C., "Effects of Various Trades on the Teeth"	49
Soft Solder Fills	192
Spokes, Sir, Inaugural Address	443
"Stray Thoughts," by T. Mansell	151
Stomatitis Fumica	84
Students' Society, Dental Hospital of London	67, 215, 555
Students' Society of Ireland	501, 558
Students' Element	411
"Submaxillary Glands, Swelling Due to Pressure of Denture," by W. Dolamore	393
Swallowing dentures	507

	PAGE
Teeth and Eye, Diseases of	329
Teeth. Suppression of in Monkey	12
Tic-Doloureux, Electrical Treatment of	130
Tomes, C. S., on "Partial Suppression of Teeth in Monkey" ...	12
"Tonsil, Absorption of Foreign Substances," by L. L. Goodale	236
"Trades, Effects on Teeth," by S. C. Smith	49
"Treatment of Inaccessible Roots," by F. C. Porter	543
Trigeminal Neuralgia, Treatment of	85
"Tubular Enamel," by C. S. Tomes	189
"Vulcanite and Vulcanizing," by J. H. Jones	1
Vulcanizing	535
Waite, W. H., on "Dental Ethics"	537
Wallis, Boyd on "Formalin"	175
Wax, to Purify	230
Whitehouse, A. L., on "Odontoblasts"	217
Wolfenden, A. B., on "Cataphoresis"	241

THE DENTAL RECORD.

VOL. XVIII.

JANUARY 1ST, 1898.

No. 1.

Original Communications.

* VULCANITE AND VULCANIZING.

BY J. H. JONES, L.D.S.I.

GENTLEMEN,—I thank you for the honour you have conferred upon me in electing me your President, and trust that you will have no occasion to regret your choice. I hope the session we have entered upon may be no less useful and interesting than many of the former ones have been. In order that this may be so, I rely upon you to give me the help which, like that of previous times, has done so much to raise the Manchester Odontological Society to the position it now holds. My earnest wish is that the future members may emulate the past, and still strive after better things, and go on increasing in number and unity ; that isolation in the profession may become a shadow of bygone days, and that our work shall unquestionably prove that “Unity is strength,” to the advantage of the dentist individually, and the amelioration of human suffering.

In accordance with custom you are looking forward to an inaugural address on some subject of interest to the Society. As some of you are aware, it is no easy matter to decide upon a topic suitable for an occasion like this. There have been so many interesting and varied papers read before you that it is with trepidation I attempt to read anything likely to be acceptable and profitable to you.

Taking into consideration, however, that we are to-night to have an exhibition of tools, appliances, and methods which have been designed or adapted by members for use in the laboratory, I have thought it advisable to confine myself to that part of our profession, and considered it would not be uninteresting if I were to introduce an important branch of our mechanical department, and venture a few remarks on “Vulcanite and Vulcanizing.”

It is not my intention to compare vulcanite dentures of to-day with the dentures of 50 years ago, when bone and metal were used, either alone or in combination ; that has been written and spoken about many times.

* A Paper read before the Manchester Odontological Society.

Not to trespass too much upon your time and patience, I will give but a glance at the growth and habitat of caoutchouc, touch on its manufacture, then refer to vulcanization.

The *Siphonia Elastica*, which yields the caoutchouc of Para—considered to be of the finest quality—is a tree growing in the dense forests on the banks of the river Amazon and its tributaries, where it is called the “Seringue.” The trees are from 50 to 60 feet high, from 2 to $2\frac{1}{2}$ feet in diameter, thin greyish bark, with wood white and light, leaves green above and ash-coloured on the under side. The india-rubber yielding tree is found also in Bolivia, Mozambique, Borneo, Madagascar, Assam, &c. The natives tap the trees by making an incision in them to obtain the milky sap, which, when exposed to the air for a short time, becomes of a sticky nature, and is then exposed to heat till various sizes of cakes are made ready for exportation.

The rubber in this crude form is obtained by the manufacturer, when it is cut open and washed in warm water, then passed through rollers—akin to those used for calendering purposes—with grooves in them, over which is cold or hot water running to wash away any foreign material adhering to it ; after which it passes through other finer rollers, until six or seven sets have been passed through. At this stage of cleansing it has very little elasticity in it. Next it is subjected to the process of stoving for a few days, to take away as much moisture as possible, at a temperature of about 110° . It is now ready for manufacturing in different forms, according to the uses for which it is intended. Pigments are now added by passing again through rollers containing steam ; one of these rollers revolves at double the speed of the other, to cause more friction and more thorough amalgamation of rubber and colouring matter. After undergoing these various rollings and dryings it is mixed with a solvent and again passed through other rollers to cause a more thorough mixing up or kneading, when it is made into “spread” (as it is termed), similar to our coffer dam, or “rolled” into sheets ready for vulcanizing, something like the condition we obtain it from the various dépôts.

For black vulcanite, lamp-black is frequently used ; that which is black in an unvulcanized form is generally mixed with this substance ; that which is white or grey, and turns black in vulcanizing, contains lead, and changes its colour by the baking process. Antimony is used freely. Sulphur very largely enters into its manufacture. Barytes is made use of to give greater weight.

Dental vulcanite is made up of a formula something after the following (American inventor's formula):—Rubber, 16 parts ; sulphur, 6 to 8 ; vermilion, 12 to 16. M. Maigne, of Paris, gives the following :—Pure caoutchouc, 44 parts ; sulphur, 23 ; vermilion, 23.

Other methods of hardening rubber by means of iodine and bromine were adopted successfully by Messrs. J. E. Newborough and E. Fagan, of New York, by whom patents were obtained, owing to the prohibitive prices charged for vulcanite when introduced for dental purposes by the manufacturer. Mr. Newborough also succeeded in hardening rubber with a product obtained by treating turpentine with sulphuric acid.

The word vulcanization owes its derivation to the Vulcan of Mythology, as representing the employment of sulphur and heat, with which that mythological personage was supposed to be familiar ; and the term was first suggested by Mr. Brockedon to Mr. Hancock, the inventor of the process, when assisting him in his first vulcanizing experiments in the year 1843.

To Mr. Hancock, for his wonderful invention, we owe the advantages which enable us at the present day to bring within the reach of the public at large a denture which, for all practical purposes, is equal to, if not superior, in many points to that which was only obtainable by the moderately wealthy, owing to its prohibitive price.

Professor Brande, who some years ago (during the spring of 1852) delivered a lecture before the members of the Royal Institution, speaks of vulcanization after the following manner :—“About the year 1843, Mr. Thomas Hancock, of London, made a very curious and important discovery in respect to caoutchouc, which has given an entirely new aspect to almost all the manufactures dependent upon it, and by which its properties are so modified and improved in respect to the great majority of its uses as to constitute it, as it were, a new material. In this altered condition it is now known under the name of vulcanized india-rubber.” This is but a short paragraph from the interesting address of Professor Brande, who speaks highly of Messrs. Macintosh and Company, of Manchester, and Mr. Hancock, in particular, who was a member of their firm. My reason for quoting these remarks is that it is but right that honour should be given where honour is due, for other names than Mr. Hancock's have been associated with the discovery of vulcanization.

Having given you a rough sketch of the unvulcanized article, I will now turn to that part of the subject which more immediately concerns us. About 21 years ago I tried a number of different kinds of rubber at various temperatures of vulcanization, in order, if possible, to hit upon the one most likely to produce the best results, taking into consideration strength and lightness, thickness and non-porosity, consistent with durability in the mouth, and capable of taking a good finish. I have lately, too, been trying further experiments in the same way, for the same purpose, and the conclusions come to are very similar.

Before giving you the results of the various bakings I have subjected the different kinds of rubber to, it is important to bear in mind that if the best results are to be obtained we must take into account the approximate thickness of the denture and the quality of the vulcanite we intend making use of, and the recognition of an important factor in vulcanising, that the absorption of sulphur takes place at about 240° , and then by raising the temperature to 270° or 280° , and allowing the rubber to remain in it for about an hour, it becomes vulcanised. A mistake generally made in vulcanizing, which we are all apt to fall into, arises from our anxiety to get the work out of hand as expeditiously as possible by getting the heat up too rapidly in our vulcanizers, and in this way not allowing a sufficient time for thorough amalgamation of sulphur and rubber; the result is we have what is commonly termed a "blown" piece, from which is emitted a strong odour of sulphuretted hydrogen, a loss of time instead of gain, and the annoyance of having to do the work again. To meet this hurrying tendency rubbers are on the market said to vulcanize at 320° Fah. in 15 minutes; it is quite possible to do it in this specified time, but, I fear you will court disappointment, and more likely than not have to deplore a failure, unless some time is taken to get up the vulcanizer to this heat. It may here be remarked that the less sulphur a rubber contains the longer the time required for vulcanization, and *vice versâ*.

I have specimens of a number of different kinds of rubber (samples of which I have brought down for your inspection, and will be pleased to answer any questions I can respecting them later on in the evening), varying in colour, quality, and thickness, vulcanized at various degrees of heat, so that you may be able to compare the same rubbers under different modes of treatment; and they show, I think, beyond doubt, that it is absolutely necessary to

vary the temperature, to have regard to the speed at which we get the heat up, and the length of time we keep it at a given point, if the success of our work is to be assured.

I am of opinion that care is not sufficiently exercised with respect to our steam gauges and thermometers. Some use only one and some the other, whilst in many cases, and much the better course, both are used in combination, the one acting as a check upon the other. It is not an unlikely occurrence for a thermometer, after it has been in use for some length of time, to get out of order by small particles of dust and dirt getting into it, and in this way prevent a true record being registered. I have always two thermometers at hand, and constantly test one by the other, but sometimes both seem to behave in an erratic manner, and neither seem reliable. This occurred lately in my workroom, so I sent off to the Dental Manufacturing Company for another at once, and tested mine by the new one, when there was found to be very little difference in them, but by some unaccountable means the steam gauge and regulator was registering incorrectly, and had gained about 15 pounds pressure apparently; this is a case in point showing that, had not the thermometer been used in combination, defective work would have been the result. The steam gauge and regulator is a very valuable addition to our laboratories. When we consider the amount of anxiety we are saved, the frequency with which we formerly had to run and have a look at the vulcanizer, and, what is still more important, greater uniformity in vulcanizing and saving of time, we cannot but wonder how we previously managed without. Whatever improvements may be added to our laboratory appliances, careful discrimination will be necessary in using the material we have at hand if good results are to follow.

I will now endeavour to give you the results of the various vulcanizing tests lately tried, and which are tabulated below:—

1.—The African black has turned out all that could be desired for a thick piece; bowspring has just begun to harden; orange comes next; ix, whalebone and white have amalgamated in their sulphur and rubber, but would require 30 to 45 minutes longer to be sufficiently hard to polish.

2.—With the exception of orange the others would stand well in wear.

3.—In this test we have very good results from a low temperature for a longer time.

4.—Black too brittle; bowspring would be improved by longer time; heat up too quick.

5.—All have come out well.

6.—Orange and black good; bowspring and ix too brittle.

7.—Black stronger than No. 6.

8.—Bowspring very good. In this test we have a good example of a "blown" piece, which could easily have been avoided by a longer time at a lower temperature, as shown in No. 1.

9.—The whalebone, horn, and bowspring have come out well; the orange would have been improved by 15 minutes longer baking; black rather brittle.

10.—Good, owing to slowness in getting heat up.

11.—Very good; for the purer kinds of rubber would recommend this temperature.

12.—The whole of the pieces in this test turn out well, owing to slowness in getting heat up—45 minutes was the time allowed.

RUBBER TESTS.

	Heat. Degrees Fahr.	Time. Min.
1.—African black, bowspring, Company's orange, Ash's ix pink, Ash's whalebone, white ... }	275	75
2.—Bowspring, orange, African black ... }	315	60
3.—Ash's whalebone, bowspring, white ... }	300	90
4.—Bowspring, African black ... }	270 300	30 45
5.—Dark Hercules, light Hercules, Ash's whalebone, Ash's improved black, Ash's unimproved black, African black, Company's black, (Alston Brand) ... }	270 315	30 45
6.—Orange, bowspring, and ix pink, African black }	270 320	30 45
7.—African black ... }	270 320	45 30
8.—Bowspring, African black ... }	270 320	30 45
9.—Ash's whalebone, Jamieson's horn, bowspring, Jamieson's orange, African black ... }	275 310	30 45
10.—Jamieson's black, African black, bowspring }	275 315	30 45
11.—Bowspring ... }	275 320	45 30
12.—Jamieson's horn, Company's black, Ash's whalebone, Ash's medium pink, ix pink, light Hercules, and Jamieson's best pink... }	320	60

I will now draw my remarks to a close, and hope I have not wearied you by my somewhat disconnected way of placing before you a subject with which you are all more or less familiar. I do not feel there is any need for apology in introducing a subject rather foreign to an inaugural address, especially when, at the present day, there is as much need as ever that different phases of mechanical skill should not be lost sight of. I thank you, gentlemen, for your patience and attention that has enabled you to hear me to the end.

SENSITIVE DENTINE.*

By A. E. CARDEN.

IN choosing this subject for my paper, I do not intend to bring anything new before you, but merely to group together, as well as I can, what is known about it, so that we may learn something about a subject which is of great interest both to the dentist and to the patient, and perhaps during the discussion some new facts may be brought to light.

Probably erosion cavities, which occur round the necks of teeth, are the most sensitive, though in some people cavities are found which are equally tender, the dentine just beneath the enamel being the most sensitive part of a tooth.

Delicate people and those of neurotic temperament suffer most in this respect, and will hardly bear the cavities to be touched with a probe, even though they may be but small and only just beneath the surface. It is rare, however, when these cavities have been filled to find that the patients suffer from them.

The cause is primarily the dentinal fibrils: the exact manner in which sensation is conveyed has not yet been satisfactorily proved.

Two or three nerves enter the apical foramen of each tooth; they run parallel to one another till just beneath the membrana eboris, where they anastomose and form a plexus. This is probably not their true termination, but, owing to the difficulty of investigating such a tissue as dentine, the different authorities have put forward various theories.

Boll, having treated a pulp with $\frac{1}{8}$ per cent. chromic acid solution, found a large number of fine non-medullated fibres near the surface. He saw them running through membrana eboris, and from their position he inferred that they had been drawn out of the

* A Paper read before the Students' Society of the Dental Hospital of London.

dentinal tubes. This has not, however, been fully confirmed ; but it is frequently found that after removal of a very sensitive peripheral layer of dentine an insensitive one is reached which is nearer the pulp the sensation of which can be allayed by reagents that could not possibly reach the pulp. There is not much doubt that the sensitiveness is in the fibrils, and is not due to transmission of irritation to pulp. An explanation of this is that there is a local alteration of the condition of fibrils.

Magitot found that the nerves were continuous with the layer of branched stellate cells beneath the odontoblasts, and if this is correct the sensitiveness of dentine would be accounted for without actual entry of nerves.

Mummery, staining with iron salt and tannin, showed that fine fibres were given off from nerve bundles, which run up to the dentine and look as if they entered it.

Messrs. Coleman and Hopewell Smith believed that the odontoblasts were nerve end organs. The great objection to this theory is that odontoblasts are present in situations where they would be useless in that capacity. The odontoblast and its processes constitute one cell, and the protoplasm is one, and whatever affects the protoplasm of process also affects that of the whole cell ; therefore, any pathological changes in dentine in consequence of irritation of dentinal fibrils is accompanied by changes in odontoblasts and tissues associated with them.

Protoplasm is sensitive. This is shown in the amœba, leucocytes, and young connective-tissue cells generally. They react to stimulants, chemical, mechanical, or thermal, and yet they contain no nerves, and cannot be said to show pain. But when protoplasmic body cells come to be built up into tissue and to enter into physiological relation with nerves, may not the sensitiveness we find in the simple cell be communicated to the brain and be changed into the sensation we know as pain ?

There seems to be no great objection to this view, while there are difficulties that are more readily explained by this than by the hypothesis that in the production of pain the initial lesion must be of some nerve or nerve-ending.

In irritation of odontoblast cells pain is produced and yet no nerve or nerve-ending is touched, there being probably no nerves in dentine. It seems evident that the fine nerve filaments closely associated with the odontoblasts communicate to the senses the

impression made in the protoplasm of the cell through injury to the fibrils.

The hyperæmia of the pulp which occurs must be induced through the agency of the nervous system by a reflex action, and in the same manner as pain itself.

Striated muscle furnishes an example of the propagation of impulses along protoplasmic bodies, or in the case of the dentinal fibrils, except that it is an efferent instead of an afferent impulse.

There is but one motor ending in conjunction with a single muscular fibre, and this is sufficient to communicate the impulse to contraction of the whole fibre.

It will be seen that the passage of an impulse along a protoplasmic body from a nerve-ending seems demonstrated, but in the explanation of the sensitiveness of dentine the impulse passes along a protoplasmic body to a nerve-ending. The conduction in each instance is the same, but the impulse travels in opposite directions in the two instances. The effect of slight irritation of ends of fibrils is to produce secondary dentine in the pulp; if irritation is more considerable, the result will be irritation of pulp instead of secondary dentine, or possibly both; the secondary dentine process gives place to irregular deposits in cases where irritation becomes extreme, and hyperæmia with death of pulp often results. Having, to the best of my ability, briefly described various theories as to cause of sensitive dentine, I will now turn to the treatment.

Treatment.—Before using any drugs the cavity should be well dried and kept dry, because dry dentine does not convey sensation so well as wet does. Another important point to be remembered in excavating these cavities is that the instrument should be very sharp so as to cut and not tear the soft tissues. When excavating near the pulp it is less painful to cut away from it.

Drugs may be divided into two classes—escharotics and sedatives. Escharotics act by forming an eschar or slough on the surface, causing death of the immediate surface. Sedatives permeate the tissue and affect the protoplasmic fibrils.

Escharotics.—Silver nitrate is very effectual, but it blackens the teeth. Its use is therefore confined to the deciduous set and to the permanent teeth only where it cannot be seen, viz., molars. A good method of applying this is to melt the salt on the end of an old bristle, forming a bead, which can be rubbed over surface previously dried. It causes pain at first, but this passes off. Great care must

be taken to protect soft tissues as it produces sloughing. A very useful agent is pure carbolic acid. The cavity should be thoroughly dried, the rubber dam being applied to keep it dry, then some warm carbolic wiped round the cavity on a piece of amadou two or three times. The carbolic should then be driven into tissues by means of hot air. Carbolic and caustic potash is recommended by some practitioners. Zinc chloride is also of service in many cases. Some of the liquefied salt on a piece of amadou is placed in the cavity for a few minutes, or a crystal of the salt allowed to deliquesce there. It often causes pain at first which however passes off. Arsenic is a very powerful drug and takes away the sensitiveness, but it should never be used for this purpose, because, if placed anywhere except in the shallowest of cavities it will cause death of the pulp; and if used even there, owing to the great difficulty of preventing leaking, it is very likely to cause sloughing of gum and alveolus. Its use should therefore be confined to devitalising the pulp. Pyrophosphoric acid may also be used for this purpose.

Sedatives.—The most powerful of this class is perhaps oil of cloves, or, better still, its active principle, eugenol. This should be applied to the cavity in the usual way and kept there for a few minutes. A very good plan, if the engine is being used, is to dip the bur in eugenol, this allaying the pain considerably in some cases. If pulp is nearly exposed, or even if an exposure has been made, and it has been decided to cap it, eugenol should be mixed with an osteo, Weston's non-irritating cement or Fletcher's artificial dentine. This prevents irritation of pulp in many cases. Alcohol and chloroform are useful, though they give pain at first. They act by taking up water and then evaporating so that the cavity is very thoroughly dried. Cocaine in the form of a hydro-chlorate was at one time thought likely to be of great use, but this hope has unfortunately not been fulfilled, and it has practically no effect. The use of the citrate has been advocated by some, but as it has to be left in the cavity for several days its usefulness is greatly diminished. Amongst new mixtures formaline and chloroform is used, but care has to be taken that it is not left in the cavity except for a very short time, otherwise death of pulp results. Any temporary filling which keeps the cavity dry tends to diminish sensibility. Where it is desired to insert a metal filling the cavity may be filled temporarily with an osteo (oxy-phosphate), and removed after six months, when the cavity will probably be able to be prepared without giving the

patient much pain. Lastly, we come to the latest method of obtunding sensitive dentine, viz., cataphoresis. By an electrical current cocaine is driven through the dentine. As it is a new idea I will give the treatment in some detail. The rubber dam must first be applied. Some cotton wool saturated with 15 per cent. solution of hydro-chlorate of cocaine in guaiacol or water placed in the cavity. To this is applied the positive electrode, whilst the patient holds the negative in his hand. A volt selector and milliamperemeter are placed in the circuit. A current of 40 volts must be obtained. The current is then turned on and increased slowly, until the patient feels a burning sensation. The increase is then stopped. The amount required is from $\frac{1}{4}$ to 2 milliamperes, and the time taken varies from 7 to 50 minutes. The time taken is, of course, a great objection to its general use, and another is the difficulty of applying in cavities at the back of the mouth.

Dr. Joy, in this month's *British Journal of Dental Science*, gives, as the result of 300 cases, 95 per cent. as successful, and says that it can be used in 90 per cent. of all cases of sensitive dentine. He also states that there is no ill effect.

Dr. Hungerford, however, in the same journal, writes that he has found it unsuccessful for obtunding sensitive dentine, although he has used it successfully in other ways.

Opinions therefore seem to differ as to its efficacy, but no doubt it can be used successfully in some cases.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly Meeting of the above was held on the 6th ultimo, the PRESIDENT (Mr. W. E. Harding) in the chair.

The minutes of the previous meeting having been read and confirmed, Mr. Stephen Keele signed the Obligation Book and was admitted a member of the Society.

Mr. G. N. Willis, L.D.S., England, East Dulwich ; Dr. J. E. Grevers, Amsterdam ; and Mr. T. E. Constant, M.R.C.S., L.D.S., England, Scarboro', were nominated for membership.

Mr. J. G. Turner, M.R.C.S., L.D.S., England, was ballotted for and duly elected a member of the Society.

The CURATOR (Mr. Storer Bennett) said that Mr. David Watson had sent a set of dental instruments, used principally for scaling and

extracting teeth, which were interesting as antique specimens, but had no other special utility. Mr. Curnock had presented to the museum a temporary molar of a young African elephant.

The PRESIDENT exhibited an elephant's tooth which had been dug up during some excavations in a garden in Shrewsbury. Mr. Storer Bennett considered it to be a deciduous tooth. He was not able to present the tooth to the museum, but presented a plaster cast of it which he had taken.

Mr. HOWARD MUMMERY showed a gorilla's skull which he had received from Dr. Leon Williams. The skull had had a tremendous blow on the lower jaw edges to the right of the symphysis. The fracture had re-united, and the animal had been able to masticate food perfectly well.

The SECRETARY read a letter from Dr. Dudley Buxton regretting that indisposition prevented his being present to take part in the debate on Mr. Thomson's paper.

Mr. TOMES described, with lantern illustrations, a case of "Partial Suppression of Teeth in a Very Hairy Monkey" (*Colobus Caudatus*). The specimen was in the British Museum collection at South Kensington, and was placed in his hands for description by Mr. Oldfield Thomas. It consisted of the skull and the skin; and the abnormality of the teeth was such that the idea was at first suggested that it might be a distinct species, in which the teeth were in a state of reduction. A closer study of the teeth, however, and the absolute identity of the skin with those of other specimens negatived this idea, and it appeared probable that it was an instance of reduction accidental in the individual, and comparable with similar examples of reduction which are occasionally met with in man. If the skull were compared with those of other males of the same species it would be found to be a trifle smaller in most dimensions, but in the maxilla and the mandible the deficiency in size was far more marked, so that it came to have a higher facial angle than belonged to the species. The posterior tuberosity of the upper jaw bore its normal relation to the other cranial bones, the mandible was also shorter and weaker, whilst its width was nearly normal at the back, but narrower in front, and the chin was more vertical. All the facial aspect of the skull, especially the zygoma, molar bones, canine fossa, &c., had a porous appearance. These monkeys were remarkable for the great length of the hair all over the body, and especially for the beautiful bushy tail.

This specimen showed no abnormality in the quantity, length, or disposition of the hair ; nevertheless, it is especially interesting to the student of odontology to find that the only recorded case, as far as Mr. Tomes knew, of great reduction in the teeth of a monkey should have occurred in a form which, so far as its hair went, deviated pretty widely from other monkeys. In the human subject, partial suppression of the teeth has been found associated with redundant hair, but also with paucity of hair. And again, hypertrophy of the teeth has been met with in at least one case of redundant hair, so that all they could say is the abnormality in hair is apt to be accompanied by abnormality in tooth development. Passing to the teeth themselves, although all the incisors were absent, the appearance of the alveolus was such as to suggest that they might have been once present, although they must have been very small ; the upper canines were large, but the lower canines mere pegs, and the premolars and molars were all much reduced. Although the teeth were so small, they have not in the least the character of retained milk teeth, but on the contrary, presented on a stunted scale the characteristics of the permanent teeth.

Mr. H. BALDWIN asked if it was clear that the animal had never had more teeth than were shown, and whether Mr. Tomes could say about the age of the animal, whether it was old or otherwise.

Mr. TOMES replied : It certainly had teeth in the front of the mouth, from the condition of the alveolus, but he did not think it had any more at the back. As to its age, nothing was known except that it was not a menagerie specimen, it was a wild animal and certainly an adult.

Mr. RUSSELL BARRETT read notes on a case of composite odontome which, he said, was very similar to the other cases reported, except in one or two points of interest. The patient was aged 23 ; three weeks previous to presenting himself he had severe pain in the right side of the mandible. After poulticing a large swelling arose, which he bore for a week, and then went to see the doctor, who lanced his gum. This gave some relief, and he went on without further advice until coming to the hospital. He had no recollection of any enlargement or swelling previous to the three weeks, nor could he remember having had any teeth extracted on that side. Examination of the mouth showed the second bicuspid and second and third molars to be missing. There was great expansion of the jaw behind the first molar, and on the surface, between masses of

granulation tissues, a rough, gritty substance, resembling necrosed bone, could be seen. An odontome being diagnosed, the mass was removed with an elevator under gas. It came away with some difficulty, and a considerable amount of the capsule was attached to it. The growth was a rough, nodulated irregular cube, measuring seven-eighths of an inch antero-posteriorly, three-fourths of an inch from above down, and eleven-sixteenths of an inch across. The weight was $102\frac{1}{2}$ grains.

Mr. RUSSELL BARRETT, while not prepared to suggest that the tumour grew in the short time the history extended over, thought it was of more rapid growth than is usually supposed, and gave three reasons for his conclusions. (1) The moulding of the anterior surface around the root of the first molar. (2) The structure of the growth. The dentine is full of interglobular spaces, and the enamel is darkly stained and unfinished-looking. (3) The enlargement of the angle of the jaw not having been noticed until recently.

Mr. STORER BENNETT said about 23 was the usual age for the eruption of odontomes, and the mere fact that the swelling in the jaw was not noticed was not sufficient evidence that it had not been there for a long time. He thought the explanation of the cause of the suppuration was a tolerably simple one, the advancing wisdom tooth probably caused absorption of the bony septum and sloughing of the capsule together with the suppuration Mr. Barrett spoke of. Sinuses were formed by pus escaping from the mouth, and thus it was the odontome was discovered. He could not follow the reasoning which induced Mr. Barrett to believe it was a formation of rapid growth.

Mr. TOMES remarked, with reference to the swelling not being noticed, he once met with a case where he thought it desirable to have a consultation with the general practitioner attending the patient and Sir James Paget. It was an enlargement on one side of the nose filling up the canine fossa. They all thought rather gravely of the case, considering it probably some new growth, until the appearance of an old nurse who said that from the earliest period the boy had had an unsymmetrical face. The sequel proved that the nurse was right. The case occurred some ten or fifteen years ago, and the patient is well at the present time.

The CURATOR asked Mr. Barrett if he would present the specimen to the museum.

Mr. BARRETT said he would be delighted to do so after he had taken one or two sections. With respect to Mr. Storer Bennett's

criticisms he had not based his conclusions entirely on the size of the swelling. The grooving of the front of the odontome had exactly moulded itself to the first molar, and it seemed to him it must have been fairly rapid for that to have come on, because it had absorbed apparently all the alveolus between itself and the six year old molar. Had the thing remained in its own crypt and calcified slowly he should not have thought the same appearance would have been presented.

Mr. W. R. ACKLAND (Clifton) showed a slight modification of a Mason's gag, so as to make the wedge going between the teeth much narrower than in the ordinary gag.

Mr. KENNETH GOADBY said he thought Dr. Cock, of Guy's Hospital, had a similar gag, which had been shown in Down's catalogue for at least a year. It also had the advantage of having aseptic handles.

Mr. ACKLAND remarked that Dr. Cock had been kind enough to acknowledge that the idea was borrowed from him, and the letter of acknowledgment would be found in the *Medical Journal*.

Mr. GEORGE THOMSON read a short communication on "Chloroform in Dental Surgery." He said chloroform, though not much used in London, was largely used in the provinces and in the Colonies. When dental surgeon to the Melbourne Hospital, in 1883, he found chloroform was given by the resident staff in the sitting posture and without special preparation. He carried out a number of experiments with dumb animals, and took observations of chloroform given in all kinds of cases, and noticed that at a stage far removed from deep anæsthesia some operations could be performed with safety. Although for so many years he used chloroform with such success, it now found no place in his practice, as he rarely required a longer anæsthesia than could be obtained in less time with nitrous oxide. If the general practitioner who still gave chloroform knew the special dangers and difficulties in dental cases they surely would no longer be party to its administration.

Mr. H. BALDWIN supposed there was no reason why ether should not be given in country places and the Colonies. Was there any objection, except in very hot places like India, to the use of ether, which gave them the necessary prolongation of anæsthesia they sometimes required without the fatal results which statistics showed attended the use of chloroform?

Mr. J. F. COLYER really did not think the views expressed in

the paper should go forth without some comment. For the past three years the *Journal of the British Dental Association* had carried on what might be described as a kind of crusade against the use of chloroform in dentistry, and the members had only to look through the columns of that Journal to see the number of deaths from chloroform which had been recorded. No sane person could come to any other conclusion than that chloroform was distinctly dangerous in dental surgery. For short operations they had a perfectly safe anæsthetic in nitrous oxide gas, and for prolonged operations an equally safe anæsthetic in ether.

Dr. HEWITT said it might possibly be within the memory of certain gentlemen present that some few years ago he devoted a little time to this very subject, and he had the honour of reading a paper at Edinburgh in which he did his best to place before the members of the British Dental Association the chief facts that were then at their disposal concerning the use of chloroform in dental surgery. When he started on that inquiry he started with a perfectly open mind. He got together all the information he could and looked up every case that was published, and he was very much surprised at the result. He was surprised, as Mr. Colyer had hinted, to find what a very large number of accidents there had been in dental surgery, and he was led to the opinion—which opinion he had since held, and which opinion he ventured to believe was held by most of them—that chloroform was not a suitable anæsthetic in dental surgery. When he had, by the courtesy of some member of the Society, a notice of the present meeting, he made up his mind to come down. He hoped to have heard some reason why their views were to be shaken, some reason why Mr. Thomson believed chloroform was preferable to other anæsthetics. He hoped, perhaps, to hear that by some special methods Mr. Thomson had devised, or by some other precautions which he had taken, he had found chloroform useful and efficient. But he must say that he had been somewhat disappointed. He had simply heard a bare statement that one individual believed that human beings and animals might be anæsthetised by chloroform, and that it was so safe that no preparation whatever was necessary—the patients might be sat in chairs, and so on, and kept only partially under the influence of chloroform. He ventured to say that such a statement in a Society like the Odontological Society could not be received without very serious criticism. Mr. Thomson had not entered into those details

which they might have expected, and until he could bring forward some facts for the barely-stated opinion, it was hardly necessary for them to enter into any arguments with regard to the subject. It seemed to him that anyone who ventured to bring forward a proposition of that kind must have definite facts and details at his disposal, so that he might be in a position to lay the opinions before the meeting. As he was now speaking, he might just say a word or two as to the objections to chloroform in dentistry. He thought they all agreed with the first thing which should guide them in selecting an anæsthetic, that it should be the safest known anæsthetic; if they had to take a little more trouble in giving gas they must do so. Their first duty was the safety of their patient. The next duty was to attend to such details as could be found by experience to be necessary—in other words, to have their patients prepared, to have all appliances at hand, and everything in fact which could contribute to the comfort and safety of their patients. To put the patient in a chair, avoid all preparation, and administer an anæsthetic which, from every side, was now known to be far more risky than either nitrous oxide or ether, was not a thing to be recommended in a Society so important as the Odontological Society. Chloroform, in addition to being an unsafe anæsthetic, was liable, as they knew, to be attended by some unpleasant after effects, another disadvantage as compared to nitrous oxide gas. The sitting posture which had been discussed was open to objection, not only from the side which Mr. Colyer had hinted at, viz., from the circulatory side, but it was open to objection from the respiratory side; that is to say, when patients were sitting in chairs, and especially when they were more or less deeply anæsthetised with anæsthetics such as ether and chloroform, unless care were taken, the asphyxia factor was liable to be introduced, and that, coupled with the depressing effects chloroform exerted upon the system—effects admitted by all physiologists—was liable to be attended by grave consequences. He could not quite agree with what Mr. Colyer said as to the effect of shock from an imperfect anæsthesia. He thought the balance of evidence at the present time was rather to the contrary, that operations under light anæsthesia were not more likely to be attended by cardiac depression than operations taking place during deep anæsthesia. In major surgical operations, such as the removal of a kidney, one was just as likely to get surgical shock during deep and profound anæsthesia as through light anæsthesia. Considering

that thousands upon thousands of teeth were taken out under light anæsthesia, like nitrous oxide gas, he thought they might see that the shock was not so important as it was thought at one time it would be. The risk was, in a very great number of cases, from the respiratory side, and as the respiration under chloroform was likely to be depressed, and as there were many circumstances which might contribute to obstruction of the respiration—especially in a sitting posture—there was no doubt that chloroform was not a suitable anæsthetic. That there were cases in which chloroform should be used in preference to other anæsthetics there could, of course, be no doubt, but they were exceedingly few and far between. As an instance, he might mention that not long ago it happened to him to have to give chloroform for a dental operation. The patient had laryngeal disease and very difficult breathing, and ether or nitrous oxide would have been out of the question; only in such a case should chloroform be employed. As he said, they had had no details given to them. Until the reader of the paper brought forward some facts which they might carefully consider, some cases in detail with notes upon them, a society like the Odontological could not take upon itself to answer his proposition in any serious spirit.

Mr. HENRY DAVIES said there were, in his opinion, very few cases where it was necessary to use chloroform. It was almost invariably the case that where a deeper anæsthesia was required the safer anæsthetic of ether was administered. Dentists preferred the upright position, which made it all the more necessary not to use chloroform.

Mr. W. A. MAGGS was quite sure the majority of the members did not agree with Mr. Thomson. Mr. Thomson had passed through a critical period, and he congratulated him upon being there to tell the Society frankly what he had done.

The PRESIDENT thought it was undoubtedly the fact that chloroform was very largely given in the provinces in dental operations, and he thought the explanation of that very likely was that a large number of provincial medical men hailed from Edinburgh, where chloroform was given so largely that it was almost a matter of routine to give it instead of ether. Men who had been educated at Edinburgh stuck to the faith that had been placed in them at their alma mater. He had often had chloroform given to patients of his own, but he had never had it given in his own house. In such a case he considered it his duty to leave the matter in the

hands of the medical man who was giving the anæsthetic. The medical man selected the anæsthetic, and it was part of his (The President's) business to dictate to him what anæsthetic he should use. The medical man, of course, took the responsibility. He thoroughly agreed with the remarks made by Dr. Hewitt and others adverse to the administration of chloroform in dental work.

Mr. TOMES said he agreed it was not exactly the business of the dentist to dictate what anæsthetic should be used ; but, on the other hand, it was open to the dentist to refuse to operate. He himself for a very great number of years, from the very first introduction of nitrous oxide, had consistently and absolutely refused to operate under chloroform. He did not mean to say that had he met with a case like that related by Dr. Hewitt, where there were laryngeal conditions, he might not have used it ; but he had never met with such a case, and he had uniformly and absolutely refused to use chloroform, no matter whether the patient had safely taken chloroform a number of times before, and no matter if the medical man who came with the patient strongly urged it. He had said, "Do as you like, but I myself will not operate."

Mr. HENRY WOOD said he should very much like to have had an expression of opinion from members with regard to the A.C.E. mixture. Where a large number of teeth had to be extracted, and in certain other cases nitrous oxide would be entirely out of place, and where several teeth—four, five, or six and more in the same jaws had to be removed—he was decidedly in favour of the A.C.E.

Mr. C. ROBINS said he felt half inclined to apologise to the last speaker for giving one case, the only case of his experience with the A.C.E. About 18 years ago he was taking charge of a practice for a gentleman, and a patient desired to bring his own medical man. The medical man was very much in favour of the A.C.E. It was administered and the operation was completed, and a certain time was allowed to elapse, three or four times as long as one would allow after nitrous oxide and then the gentleman left. He staggered to the hall door and looked more or less intoxicated, and it was a great chance that he did not get "run in" on his way home, so peculiar was his behaviour.

Mr. GEORGE THOMSON, in reply, said he was delighted to hear Mr. Tomes say so firmly that he not only would not have chloroform given, but refused to operate under chloroform. That was

the position that he had taken up himself for some years. He thanked Mr. Hewitt for his candid criticism ; but at the same time would remind him that his paper was very much in the nature of a confession of wrong doing for some time.

The thanks of the meeting having been given to those gentlemen who had brought forward casual communications, to Mr. Thomson for his paper, and to the various members who had assisted in the discussion, the Society adjourned until the 10th of January, 1898.

News and Notes.

THE following gentlemen having passed the necessary examinations have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons, England :—J. U. Alder, University College, Royal Infirmary and Dental Hospital, Liverpool ; C. Ashby, Charing Cross and the Dental Hospital of London ; G. O. Betts, Guy's Hospital, Dental Department and School ; E. Bevington, University College, Royal Infirmary and Dental Hospital, Liverpool ; F. Billing, Charing Cross and Dental Hospital of London ; S. Bonnalie, Charing Cross and Dental Hospital of London ; S. Bradford, Charing Cross and Dental Hospital of London ; T. W. Bromley, Guy's Hospital, Dental Department and School ; H. A. G. Butler, Guy's Hospital, Dental Department and School ; H. A. E. Canning, Guy's Hospital, Dental Department and School ; J. K. Clark, Guy's Hospital, Dental Department and School ; F. E. Corin, Guy's Hospital, Dental Department and School ; J. M. P. Crombie, M.B. and B.S. Aberd., Guy's Hospital, Dental Department and School ; H. L. Dorrell, Guy's Hospital, Dental Department and School ; E. B. Dowsett, Guy's Hospital, Dental Department and School ; A. Drake, University College, Royal Infirmary and Dental Hospital, Liverpool ; H. H. Gudgeon, Middlesex Hospital and National Dental Hospital ; A. H. Harris, Middlesex Hospital and National Dental Hospital ; J. W. Hislop, Charing Cross and Dental Hospital of London ; S. J. Holford, Charing Cross and Dental Hospital of London ; T. H. Hulme, London Hospital and the National Dental Hospital ; E. Joseph, Charing Cross and Dental Hospital of London ; A. M. Kempe, Guy's Hospital, Dental Department and School ; A. Kendrew, Guy's Hospital, Dental Department and School ; H. Kenyon-Jeffs,

Charing Cross and Dental Hospital of London ; R. H. Manning, St. George's and Dental Hospital of London ; G. Marshall, Guy's Hospital, Dental Department and School ; T. H. Miller, M.B., Ch.B.Vict., Owen's College, Royal Infirmary, and Victoria Dental Hospital, Manchester ; N. Miller, Charing Cross and Dental Hospital of London ; R. H. Moore, Charing Cross and Dental Hospital of London, and Meath Hospital, Dublin ; H. J. Morris, Charing Cross and Dental Hospital of London ; J. M. Murphy, Charing Cross and Dental Hospital of London ; E. H. Musgrove, Guy's Hospital, Dental Department and School ; A. H. Parrott, Mason College, Queen's and General, and the Dental Hospital, Birmingham ; A. G. Peck, Charing Cross and Dental Hospital of London ; G. A. Pedley, M.R.C.S.Eng., St. Mary's, National Dental, and Guy's Hospital, Medical Department and School ; J. B. Petley, Charing Cross and Dental Hospital of London ; C. H. Preston, F.R.C.S.Eng., Owen's College, Royal Infirmary, and Victoria Dental Hospital, Manchester ; S. J. Redpath, Guy's Hospital, Dental Department and School ; J. C. Round, M.R.C.S.Eng., St. Thomas's and National Dental Hospital ; W. A. Schlesinger, Charing Cross and the Dental Hospital of London ; E. T. Shields, University College, Royal Infirmary, and the Dental Hospital Liverpool ; V. G. Smith, Guy's Hospital, Dental Department and School ; C. B. Stainer, Guy's Hospital, Dental Department and School ; G. W. Storey, Middlesex and the National Dental Hospital ; B. J. Summerling, Guy's Hospital, Dental Department and School ; C. B. Thomas, Middlesex and the National Dental Hospital ; E. Tilley, Middlesex and the National Dental Hospital, W. J. Trembath, Dental Hospital and School of Ireland, and Royal College of Surgeons, Dublin ; E. E. Turner, Mason College, Queen's and General, and the Dental Hospital, Birmingham ; A. William Walker, Guy's Hospital, Dental Department and School ; A. West Walker, Mason College, Queen's and General, and the Dental Hospital, Birmingham ; F. Ward, Guy's Hospital, Dental Department and School ; M. White, Charing Cross and the Dental Hospital of London ; W. Wilmore, Guy's Hospital, Dental Department and School ; J. C. Wing, Middlesex and the National Dental Hospital ; C. C. Wood, Mason College, Queen's and General, and the Dental Hospital, Birmingham. Twenty gentlemen were referred back to their professional studies for nine months, and one for one year.

THE DENTAL RECORD LONDON: JAN. 1, 1898.

SCHOOL DINNERS.

WE make no apology for devoting so much space in this issue to reports of the speeches at Hospital Dinners. True, we have heard objections raised to so doing; indeed, some would make these dinners silent feasts. But dinners and speeches are but means to an end: to bring into touch with their college, at least once a year, those students who have long since passed out of its walls into the battle of life. It is true more perfect ways could be suggested. It would be nice, were it practical, that past students should become fellows of their schools, and in some way share in its management or election of its board of management. To a certain extent this they can now do, for in this country, at all events, the schools are associated with hospitals, the life-governorship of which does not involve a prohibitory subscription, and confers a vote at the annual meeting of the hospital. Annual meetings are not, however, usually distinguished by their size nor interest, and we confess to feeling that it would be a source of great strength to a school, whether it be medical or dental, could past students be kept in closer touch with their alma mater. At present the Annual Dinner serves as the annual meeting of the school. In a sense, the speeches serve to ventilate professional opinion on the doings of the school. Schools exist on their reputation, and this is made or marred for them by their students. The goodwill, the kindly feeling of their past students, is almost necessary for the existence of a school; and, though these may, at present, possess no direct power in the management of the school, still their expressed opinion is bound to influence the managing committee of the school, as a whole, and the thoughts of the individual members of it. The force of this opinion appears to us to be sometimes overlooked. Not rarely we hear that the opinion of the profession should be taken on this or that matter. For instance, we have heard it suggested that the recent changes in the curriculum for the English licentiate ship

should have been discussed in some giant assembly to be specially called. This failing, such thinkers assume they have no power in educational matters. Such an assumption starts from the postulate, that those bodies who control such matters are not accessible to reason. The individual members are bound to be influenced by that which, when suggested, appears fair and reasonable. In the larger questions of professional interest there are many ways in which this opinion has, and can, make itself felt. But there are not many ways by which it is expedient to open questions touching a special school. The occurrence of such an opportunity, as the after-dinner speeches of these annual gatherings offer, is not one, therefore, to be under-estimated.

DENTAL BUSINESS AT THE GENERAL MEDICAL COUNCIL.

THE Winter Session of the General Council of Medical Education and Registration was opened on Tuesday, November 23rd, and extended over seven sittings, the last of which was held on Tuesday, November 30th. The President, Sir Richard Quain, being unable, on account of illness, to attend, his place in the chair was taken by Professor SIR WILLIAM TURNER, of Edinburgh University.

Dental business occupied a considerable portion of the time of the final sitting of the Council. On the programme for that occasion there appeared the consideration of the report of the Dental Education and Examination Committee; the following notice of motion, to be moved in committee by Dr. Heron Watson, seconded by Dr. D. C. McVail: That this Council is of opinion that the suggestion of the Dental Education and Examination Committee that the Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow should unite in conferring a single qualification in dental surgery is not provided for in the Dental Act (Section 28 of that Act never having come into operation) and need not therefore be entertained by this Council, whose duties consist simply in administering the Act; and the following notice of motion to be moved in committee by Dr. Heron Watson, seconded by Dr. D. C. McVail, that this Council, while recognising the care and attention bestowed by the Dental Education and

Examination Committee upon the consideration of the reports furnished by the inspector of dental examinations, desires to place on record that no occasion is shown for the suggested withdrawal of materia medica from the dental curriculum and from the list of subjects for examination, and that the substitution in its stead of the hospital attendance and general lectures and four years of practical work does not meet either the requirements or the approval of this Council ; and further that the conclusion at which the Dental Education and Examination Committee arrives, "that an examination in general medicine and therapeutics is not required," the necessary teaching and learning of these subjects so far as they belong to the practice of dentistry being included in the general scheme as laid down," is also contrary to the requirements and approval of this Council.

The Council decided to go into committee to discuss the recommendations of the Dental Education and Examination Committee.

Mr. BRYANT, chairman of the committee, said that in looking into this matter he found that the Council had never considered the "additional report" which was presented to it in May last, because it was referred to all the examining bodies for their criticisms before this Council discussed it. So he now brought before the Council not only the "additional report," with the answers of the examining bodies, but also the third or "final report." He had hoped to have been able to rise and ask the Council to adopt this "final report," but when he looked down the programme of business and saw this notice of motion by Dr. Heron Watson and Dr. McVail he felt that to meet the motion he should be obliged to go into the details connected with all these reports and so it struck him that it would be well if the Council accepted the "additional report" and the "final report" as read. They would be reported as usual in the public journals, and then he would be able to confine himself to the criticisms contained in this notice of motion.

The CHAIRMAN pointed out that in the "final report" there were no specific recommendations.

Mr. BRYANT said there was no idea of having specific recommendations. His wish was simply that the Council should adopt the "final report," which would meet all the requirements of the case.

The CHAIRMAN thought this report should be read to the Council.

Mr. BRYANT then read the report, which was in these terms, viz. :—

This report is based upon the "additional report" of this committee, which was presented to the General Medical Council in May last and was entered on its minutes, together with the remarks upon it made by the four licensing bodies to which it was referred with the whole of the previous reports bearing upon the recent inspection of their examinations.

We have reason to believe that the report of the Royal College of Surgeons of England will be favourable to the recommendations of this committee with respect both to the curriculum and to the examinations, but it cannot be communicated officially at present.

Upon the recommendation of this committee that the Royal College of Surgeons of Edinburgh should unite with the Faculty of Physicians and Surgeons of Glasgow, and so form one conjoint Dental Board for Scotland, the Edinburgh college reports that the recommendation was carefully considered by the President's Council of the college, and subsequently at the statutory meeting of the college on October 20, 1897, when it was resolved that the recommendation of this dental committee should neither be accepted or even entertained by the college.

The Faculty of Physicians and Surgeons of Glasgow, after referring to their legal advisers, likewise reports :—

"In view of the fact that there appears to exist no statutory provision for sanctioning the suggested combination, and of the doubtful validity of a voluntary or non-statutory union of the two boards, the Faculty consider that they are at present precluded from taking action in the direction indicated by this recommendation."

Under these circumstances this committee can only express its regret that its suggestion for providing one dental examination board for each division of the United Kingdom cannot at present be carried out.

With respect to the recommendation of this committee that the three months' course of *materia medica* should not be required, it would appear, from the remarks of the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, that such an omission is not by them considered desirable; whereas the London Royal college is in accord with the recommendation, and the Irish college seems to be indifferent to it, as it passes it by.

With respect to the recommendation of this committee that the courses of lectures in physiology, metallurgy, and mechanical dentistry should be helped by special practical courses—

The Edinburgh Royal College of Surgeons states that the additional courses suggested already substantially exist in its curriculum, although not directly specified under a separate designation, and “considers that the remedy for any supposed deficiency in such teaching will be found, not in further sub-dividing the courses in the curriculum, but in securing that the courses as at present prescribed are thoroughly and efficiently utilised.”

The Faculty of Physicians and Surgeons of Glasgow fully recognises the importance of practical instruction, and that the changes recommended are generally in that direction. It thinks, however, that whenever practicable the practical instruction should be combined with the ordinary course ; but approves of the addition of a practical course of dental metallurgy.

The London college already acts up to the recommendations, and the Irish college has not raised any objections to them, consequently your committee leave these recommendations as they now stand with the assurance of the examining bodies that the practical part of the instruction will be effectively provided for.

The recommendations of this committee with respect to examinations are covered by the scheme of the London college, and are not criticised by the Irish college. The Edinburgh college states that its first and second examinations comprehend substantially all the subjects suggested by this committee, although the order in which they are taken at the examinations may differ. The college criticises severely the suggestion of this committee that an examination in general medicine and therapeutics is not required.

The Faculty of Physicians and Surgeons of Glasgow is of opinion that, assuming there should be a preliminary and two professional examinations, the grouping of the subjects under these examinations is, on the whole, judicious ; but it considers that all the subjects of the dental curriculum can be sufficiently covered by the two professional examinations, but agrees with this Committee that the practical tests in the examination should be increased in stringency. It, however, points out to the committee that there is no necessity for elementary chemistry to be included in both the preliminary—if instituted—and first professional examinations. The error was due to the omission of a note in the original Report that chemistry

would only be included in the first professional examination if it had not been passed in the preliminary.

The Faculty also complains that "on the important point of the extent and area of the examinations of dental students in such subjects as anatomy, physiology, and general surgery, the recommendations of this committee give no leading, and are of opinion that in such subjects the range of topics to be examined on should be less extensive than that for general medical students, and be limited by some consideration for their practical application to dentistry.

The committee feels that it does not fall within the province of the Council to furnish anything like a complete syllabus of any part of the examination; but would suggest that it should include, in addition to a thorough acquaintance with dental and oral anatomy, pathology, and surgery, a general knowledge of anatomy and physiology, and of the principles of medicine and surgery, with only such details, in any of these subjects, as may have a practical bearing upon the actual requirements of dentistry.

Your committee finally now present to the Council the recommendations as originally drawn up by the dental curriculum committee, 1879, in regard to the education of the dental student, and corrected up to date according to the experience gained by one or other of the four dental licensing bodies.

The deviations from the original scheme which have been adopted have, as it were, grown out of experience, and their results have chiefly been to encourage the practical branches of the dental art, and to eliminate what has been found to be unnecessary.

Neither radical changes in curriculum nor rigid methods in examination have been suggested, for your committee are well assured that so long as the examining bodies do not fall behind the main recommendations of this Council, either in the way of curriculum or examination, this Council has no other wish than that the details of the course of study and examinations may vary in the way which seems best to the governing authorities of the licensing bodies, all of which have full liberty of action. But this committee feels that all the bodies interested ought to work on the same lines. When these objects in view, it is hoped that the recommendations of this committee will prove acceptable.

THOMAS BRYANT, *Chairman.*

In an appendix the committee set forth the proposed amended recommendations of the Council. These were :

THE DENTAL RECORD.

(I) IN REGARD TO PRELIMINARY EDUCATION APPLICABLE TO DENTAL QUALIFICATIONS.

(a) The registration of dental students shall be carried on at the Medical Council office in London, or at the branch Council office in Edinburgh or in Dublin, in the same manner as the existing registration of medical students, and subject to the same regulations as regards preliminary examinations.

(b) Students who commenced their professional education by apprenticeship to dentists entitled to be registered, or by attendance upon professional lectures, before July 22, 1878 (when dental education became compulsory), shall not be required to produce evidence of having passed a preliminary examination

(2) IN REGARD TO PROFESSIONAL EDUCATION.

(a) Candidates for a diploma in dental surgery shall produce certificates (i) of having passed a preliminary examination in general education ; (ii) of being 21 years of age : and (iii) of having been engaged during four years in professional studies.

(b) Candidates shall produce certificates of having passed through the following curriculum :—

(i) GENERAL MEDICAL SUBJECTS.

Anatomy, one winter session.

Dissections, 12 months with demonstrations.

Physiology, with a separate practical course or
with practical work introduced in the course.

Chemistry, including physics.

Surgery, } including pathology.
Medicine. }

} one course
of
six months.

Materia medica, one course if thought necessary.

Practical chemistry, one course of three months.

Attendance at a recognised general hospital with clinical instruction, not less than one year.

(ii) SPECIAL SUBJECTS.

Dental anatomy and physiology, human and comparative, not less than 24 lectures, including dental histology and the preparation of microscopic sections.

Dental surgery and pathology, not less than 20 lectures.

Metallurgy, not less than 12 lectures, or demonstrations made practical, or with a distinct practical course.

Mechanical dentistry, not less than 12 lectures, with separate course of practical dental mechanics.

Practice at a dental hospital, or

Dental department of a general hospital, two years.

(c) Candidates shall produce certificates of having received three years' instruction in mechanical dentistry from a registered practitioner.

(d) The three years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student; but no year of such instruction in mechanical dentistry shall be counted as one of the four years of professional study unless taken after registration.

(e) One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study.

Mr. BRYANT moved and Mr. BRUDENELL CARTER seconded :—
"That this report and the amended recommendations be adopted."

Dr. McVAIL suggested that the first notice of motion should now be taken as an amendment.

Mr. BRYANT said he did not think this was necessary. The committee made a recommendation to the Scottish bodies; they said the thing could not be done; but there was no reason why the recommendation should not stand in the report.

Dr. BATTY TUKE: What is the good of making a recommendation that is not possible?

The CHAIRMAN put it to Dr. Heron Watson whether it was necessary to proceed with his motion after the statement Mr. Bryant had made.

Dr. HERON WATSON said he thought it was necessary, if for no other reason than to show that the committee had gone beyond its duty. This committee was founded for the purpose of carrying on the inspection of the examinations and keeping the Council informed about the subjects that ought to be brought before their notice in that connection; but so far as he knew there was no recommendation on the part of the Council that it should be the duty of the committee to instruct the Council as to what they should do, and it appeared to him it was no part of their duty to do so, because, in point of fact, the only committee which, according to the Dental Act, had any right in these matters was the Executive committee. He doubted, moreover, whether this lucubration on

on the part of the Committee was in a proper form for the consideration of the Council. He did not see that there could have been any difficulty in the committee formulating certain definite matters in order that the opinion of the Council might be taken upon them. It was a great misfortune that there should be mixed up statements of fact, and also recommendations founded partly upon these facts, and partly upon things that were not facts. Not only so, but they were told that the Irish body had sent in no recommendations or notice of the matter at all. The situation reminded him of the hunting story of the dogs liking it, and the horses liking it, and the men liking it ; but the fox made no observation.

Dr. McALISTER reminded Dr. Heron Watson that a remit had been made to this committee to consider whether it was desirable to amend the recommendations of the Council as to the dental examinations.

The CHAIRMAN said that apart from this remit the general functions of the committee were to consider and report upon all matters connected with professional dental examinations, and with the inspection and visitation of these examinations.

Mr. BRYANT said that after what had fallen from Dr. Heron Watson he must ask leave to read the "additional report." It was as follows :—

PART I.—WITH RESPECT TO CURRICULUM.

THE changes in the curriculum of 1879 which are now recommended are based upon the collective experience of the four Dental Examining Boards in the United Kingdom, and are by no means revolutionary.

Thus in anatomy, in regard to which this Council recommended in 1879 the attendance upon two winter courses of lectures, or as an alternative to the second full course, a short one of not less than 20 lectures on the anatomy of the head and neck, together with some nine months' dissections, it seems that not one of the examining bodies has in recent years called upon their dental students to give more attention to anatomy than is now required of the general medical students who seek to pass one of the conjoint boards, and that the study of anatomy now called for is attendance of a six months' course of anatomy, with 12 months' dissections, including demonstrations.

The committee therefore recommend the adoption of this change.

One six months' course of lectures in physiology seems to be generally approved, but the committee would like to see this course helped by a practical one, either introduced as part of the six months course, or in preference as a separate course.

The English College of Surgeons adopts the latter arrangement.

The course of dental anatomy and physiology of not less than 24 lectures has proved quite acceptable to the examining bodies, and the course has apparently included human and comparative anatomy. The committee would emphasise the necessity of this arrangement being always carried out, together with instruction in dental histology with the preparation of microscopic sections.

The recommendations of the Council as to a six months' course of lectures on chemistry, with a practical course of not less than three months, and a separate course of not less than 12 lectures on metallurgy, do not appear to have been closely followed ; for one of the examining bodies has included the subject of metallurgy in the course of chemistry ; whilst another not only requires a separate course of lectures on metallurgy, but a separate practical course on the same subject.

The committee hesitate at the present time to recommend that this extra practical course should be generally adopted, but would suggest that where no separate course of lectures on metallurgy is given a distinct practical course should be enforced.

The recommendation that one six months' course of lectures on both surgery and medicine should be required, together with a special course of not less than 20 lectures on dental surgery, is generally accepted ; and the committee would only suggest that in all these courses pathology should be included, as it is most important that in clinical work the examining bodies should show the necessity of such work being based on pathological knowledge.

The single course of not less than 12 lectures on mechanical dentistry which this Council recommends seems to have been generally looked upon as somewhat limited, since at one college two courses are required, and at another a separate course of practical work is called for.

The committee believe that in this special dental work these deviations from the recommendations of this Council are good, and

advise that a course of practical dental mechanics should be added to the curriculum.

With these slight additions to the curriculum, all of which tend to improve the practical work of the dental profession, the committee advise the subject of *materia medica* to be eliminated. To require a dental student to attend a three months' course of lectures on this large subject the committee believe to be quite unnecessary, for it seems certain that the therapeutical knowledge which is required by the dental practitioner will be gained during his attendance on the wards of the hospital, the general lectures he is required to attend, and during his four years of practical work.

With respect to the other recommendations of the General Medical Council the committee have no suggestions to make in the way of alteration, such as

Attendance at a recognised general hospital for one year with clinical instruction ;

Attendance on the practice of a dental hospital or dental department of a general hospital for two years ;

The attainment of the age of 21 years ;

Having passed a preliminary examination in general education ;

Having been engaged in professional studies during four years ;

Having received instruction in mechanical dentistry during three years ;

since all these recommendations seem to be acceptable to all the bodies.

PART II.—RECOMMENDATIONS WITH RESPECT TO EXAMINATIONS.

With respect to the division and order of examinations for the dental diploma, it does not appear that the General Medical Council has made any recommendations beyond the suggestion that the examinations should as far as possible be of a practical character, and should include actual operations and the preparation of specimens of mechanical dentistry (vol. XVI., p. 146, 1879). The Council in 1879 clearly thought it expedient to leave all such arrangements in the hands of the examining dental bodies.

It is satisfactory to report that this confidence has not been misplaced, although your committee, as an outcome of the inspections

which has been just completed, are of opinion that some improvement in the order and course of the examinations may with advantage be introduced.

(1) They would suggest that the preliminary subjects of physics, chemistry, and practical chemistry—which may be attended before registration—should be passed before, or as soon as, the student enters at a dental school ; this examination being made to stand in relation to the dental diploma in the same position as it is desirable that the preliminary scientific examination—which includes the same subjects—should stand to a registrable medical qualification.

(2) That the first professional examination should be open to the student after the completion of his three years' instruction in mechanical dentistry under a competent practitioner, and after registration and six or twelve months' attendance at a recognised dental hospital and school, on the production of certificates of having attended a course of lectures on dental metallurgy, either including practical work or with, if possible, a course of practical metallurgy as well ; and a course of lectures on dental mechanics, either including practical work or with a course of practical dental mechanics as well.

This examination should include elementary chemistry, mechanical dentistry, and dental metallurgy ; the two former being partly practical and partly oral, the latter by written paper only.

It might likewise include the subjects of dental anatomy and physiology, as well as general anatomy and physiology, if found convenient to the examining bodies.

The practical part of both the first and the second examination should always be made a strong feature.

(3) That the second professional or final examination should be open to the student after the completion of his four years' professional study from the date of registration as a dental student, and after the lapse of not less than six months from the date of passing the first professional examination ; the student being required to produce evidence of having previously attended at a recognised dental hospital and school :—

(i) the practice of dental surgery for two years ;

(ii) a course of dental anatomy and physiology, including dental histology ;

(iii) a course of dental surgery, either including practical work, or with a course of practical dental surgery as well ;

(iv) a six months' course of anatomy at a recognised medical school and of having performed dissections for twelve months ;

(v) a six months' course of physiology, including practical work, or a separate practical course of physiology ;

(vi) a course of lectures on surgery, including five lectures on the affections of the mouth ;

(vii) a course of lectures on medicine.

Certificates should also be produced of having attended at a recognised hospital or hospitals the practice of surgery and clinical lectures in surgery for one year or two winter sessions ; and of being 21 years of age.

The examination should be partly written, partly practical, and partly oral.

It should include :—

Practical anatomy and physiology ; dental anatomy and physiology (unless these subjects have been included in the first professional examination) ;

General surgery and pathology ;

Dental surgery and pathology ;

Practical dental surgery ; and

Medicine and therapeutics so far as applicable to dental surgery.

THOMAS BRYANT, *Chairman.*

Mr. BRYANT said that with regard to this question of *materia medica*, his own college, the Royal College of Surgeons of England, had eliminated it from the course of study for the general medical student. The general medical student was not required to attend a course of *materia medica*, and they did not ask for more from the dental student than they did from the general medical student. They did not think it right to do anything which might lead dentists to imagine that they were justified in administering drugs for internal complaints. When learning the work of their profession in the lectures and advice given to them in practical surgery, they were taught to write prescriptions, but his college did not wish them to write other than simple prescriptions of lotions, and so on, and there was no wish to suggest that they were justified in administering medicines for internal diseases. That was all the Edinburgh college seemed to require from students—a knowledge of narcotics, emetics, purgatives, depressants, and stimulants. In the case of Glasgow they simply said a knowledge of therapeutics in relation to emetics and

vomiting, including the modes of prescription and the medicines employed. There did not seem a very wide scope of materia medica required for that. The Royal College of Surgeons in Ireland seemed to eliminate it altogether, for he could not find a single note connected with the therapeutical treatment of diseases such as might fall under the eye of dentists. The committee had given very serious attention to this matter of materia medica. They found that the college which after all had had far more experience in dental examinations than any other college in existence, had come to the conclusion that it was going too far to ask the dental student to go through a course of materia medica, and to be fully examined upon it, and had no wish to make the dental student think that he was justified in prescribing for internal diseases. His colleagues on the committee quite recognised the force of that argument, and so it was left open in their suggestions, that materia medica might be given by the colleges if they thought fit, but they did not recommend it. In these circumstances he could not say that there was any objection in leaving it standing. After all these were not requirements. The Council had no absolute power of compelling any one of these bodies to do this or the other thing. They could only express pleasure when they followed their recommendations, and regret when they did not follow them, and there was no power of compulsion ; and he thought that so long as the bodies did not fall behind the recommendations of the Council they ought to be fairly satisfied. As to the suggestion that came from the Glasgow Faculty, that some sort of guide should be given as to the extent to which dental students should be required to go into anatomy, physiology, medicine, and surgery, and, if they liked, materia medica. He at first sight was so satisfied with the suggestion and its wisdom that he sat down at once to form a kind of syllabus of the subjects, but after he had done it he said to himself, "Were they right? Was it the function of this Council to draw up anything like synopses or syllabuses for the examining bodies?" and he came to the conclusion, and so did the committee, that it was not their function, for if they were called upon to write a syllabus upon materia medica, or medicine, or surgery, they might be asked to write syllabuses or synopses upon all other subjects. At any rate, they thought it was not for them to do it. Therefore they put in their report the statement that they felt that it did not fall within the province of the Council to furnish anything like a complete syllabus of any part of the examination, but would suggest that it

should include, in addition to a thorough acquaintance with dental and oral anatomy, pathology, and surgery, a general knowledge of anatomy and physiology, and of the principles of medicine and surgery, with only such details in any of these subjects as might have a practical bearing upon the actual requirements of dentistry.

The CHAIRMAN said it appeared to him that it would be a very difficult thing to put forward motions which would bring the matters in this report to a definite issue. The committee should have formulated a series of specific recommendations, so that the Council could have taken a vote upon each. In that way the opinion of the Council could have been ascertained as each question was put. He would suggest that they were not ripe really to come to a formal issue upon the report at the present time. There had been put into his hands an amendment by Dr. MacAlister to this effect :—"That it be remitted to the Dental Education and Examination Committee to draw up their recommendations in the form of a series of propositions, each dealing with a single subject in order that the Council may be enabled next May to come to a definite decision on this subject."

Dr. MACALISTER in moving this amendment, saw there was much valuable material in the report, but no clear statement of the issues.

Mr. GEORGE BROWN, seconding the amendment, said that the Council had not before it sufficient information to enable it to come to a proper conclusion, seeing that Mr. Bryant had said there was no statement from the Irish body or from his own body. He thought it would be much better to discuss the whole matter at the next session of the Council.

Dr. McVAIL suggested that when the committee had drawn up their propositions they should send a copy of them to each of the four examining bodies at least two months before the meeting of this Council, in order that the bodies might have an opportunity of making observations upon them. The whole thing was in a muddle and he thought they should seek the help of the bodies in trying to get it out of the muddle.

Mr. BRYANT said he quite saw how much easier it would have been for the Council if there had been a series of resolutions. But that was not the meaning of their report. There were only four examining bodies, and this was the first occasion on which they had reviewed the whole curriculum. They had not discussed the question of the examinations at all. They felt that for them to attempt to lay down strict regulations was out of the question, and they were

willing to give the bodies a certain licence. Supposing he, as the representative of the Royal College of Surgeons of England, were to come forward and say that they had removed the subject of *materia medica*, and that were found to be not in accordance with the regulations of this Council, would they put out of court one of the most important examining bodies in dentistry in the country? He adhered to his motion as the most expedient in the circumstances.

SIR RICHARD THORNE said that since he had been a member of the Council nothing had struck him more than the encouragement they gave for the education of mongrel doctors, and if this amendment had not been proposed by Dr. MacAlister he himself should have moved: "that it be remitted to the Dental Education and Examination Committee to consider and report whether it is not possible and expedient so to restrict the curriculum for dental students, as to make it less adapted to the practice of medicine and surgery, and better adapted to the practice of dentistry." When he looked at some of these examination papers he did not know where they were drifting. One day they were attempting at this Council to stop all sorts of irregular practice, and the next they were supporting the education of these men in medicine and surgery. Nine-tenths of the work was not only not adapted to the profession of dentistry, but represented so much waste of time. Than these papers he never read anything which was likely to give rise to a greater sham and to encourage men to do the very thing which this Council was always saying they should never do. It was a direct wrong to the dentist, and it was a direct wrong to the medical profession. He had a great sympathy with the four examining bodies. If they could carry all this out they would very soon limit the number of dentists, and it would be a great gain to them; but this Council had to consider the public, and the question was whether they had to educate these half-doctors, and then call them dentists.

Dr. HERON WATSON said that so long as dentistry was set apart from the medical profession, and so long as Parliament saw fit to put it under the regulation of this Council, then this Council must see that a proper standard of efficiency was observed. The dentist must have a certain standing of culture and education from which to look out upon the specialism which he proposed to practise.

The amendment of Dr. MacAlister was then put to the Council and carried by a very large majority, and on the strength of this Dr. Heron Watson withdrew his second notice of motion.

The CHAIRMAN asked Mr. Bryant whether he proposed to press that portion of the report which referred to the suggested combination between the two Scottish bodies.

Mr. BRYANT said he considered it desirable that the record should remain.

Dr. HERON WATSON said he thought the committee should acknowledge that they had been entirely wrong in this matter, and withdraw the reference to it in the report.

Dr. GLOVER : May I ask the Chairman if there is anything in the Dental Acts to prevent the two bodies in Scotland voluntarily combining ?

The CHAIRMAN : Yes, there is.

Dr. McVAIL assured the Council that the subject of a combination was discussed by the Glasgow Faculty immediately after the passing of the Act, and from time to time since, and this reference in the report would make it appear that the two bodies had given no consideration to the matter until it was brought to their notice by this committee. Both bodies had very fully considered the matter, and they found they could not possibly unite under the present Dental Act. They had taken legal advice of the highest kind, and if they were to unite neither diploma would be worth anything ; each body must conduct the examination independently and give its own diploma. The offensive part of it was that the two bodies were lectured as if they did not know their business.

Mr. BRYANT said it was satisfactory to find that the two bodies in Scotland were seeing with the same eye as the committee, and he was only sorry that the committee did not know of this before. But that did not alter the value of the committee's suggestion.

Dr. HERON WATSON insisted that the reference in the report was nothing short of an impertinence.

Dr. McALISTER reminded the Council that the report was not adopted, and consequently if the Council took no action no harm could be done.

Dr. HERON WATSON said he hoped that if in the warmth of debate the committee did not see fit to withdraw it just now, they would at the May meeting be actuated by more gentle and pleasing ideas.

The CHAIRMAN suggested that when at the May meeting Mr. Bryant brought up a new report he should show how the bodies themselves had thought of this amalgamation, but found they were prevented on account of it not being conversant with the Act.

Mr. BRYANT said that all this was quite new to him, and the two colleges in their criticisms of the recommendations of the committee, never alluded to it or spoke of it as a recent subject. They never for a moment led the committee to believe that it had been thought of before.

Dr. HERON WATSON said that at the Council meeting in May last he told Mr. Bryant that the attempt had been made by the two bodies immediately after the passing of the Act.

The CHAIRMAN: Then, Mr. Bryant, in bringing up the new report you will refer to this matter, and put the two colleges in their proper position?

Mr. BRYANT: Yes.

Dr. HERON WATSON: I will in these circumstances withdraw my notice of motion.

The amendment of Dr. MacAlister was then put as a substantive motion, and was carried; and on the Council passing out of committee it was duly confirmed.

On the motion of Dr. HERON WATSON, seconded by Dr. McVAIL it was agreed:—"That an honorarium be voted by this Council to Mr. Tomes, together with the best thanks of the Council, for the inspection he has made, under the direction of this Council, of the dental examinations of all the bodies granting dental diplomas, and for his reports upon these examinations, and upon the requirements of the curriculum in the case of each of the bodies granting a registrable diploma in dentistry.

"The Council also resolves that the amount to be awarded be remitted to the Executive Committee for determination."

The other dental business before the Council had reference to certain registrations in the Dentists' Register, and this was discussed in private, but on the re-admission of the public, the chairman announced that the Council had passed a resolution directing the Registrar not to act on instructions he had already received in the matter of certain registrations in the Dentists' Register until further orders from the General Medical Council.

THE NATIONAL DENTAL HOSPITAL AND COLLEGE.

THE Annual Dinner of the above was held on the 26th November, in the Venetian Room of the Holborn Restaurant. The chair was taken by Mr. E. W. ROUGHTON (the Honorary Visiting Surgeon

to the Hospital) and there was a large gathering of the staff, students and friends. Amongst the visitors were Drs. Blacker and Samuel West, Professors Bradford and Spencer, Messrs. Morton Smale, J. Smith Turner and S. J. Hutchinson.

The toast of "The Queen" having been duly honoured, the CHAIRMAN proposed "The National Dental Hospital and School." He knew that many of the old students who attended this dinner liked short speeches, in fact there were some who thought the speeches were usually too long—one gentleman wrote to the Dean that the annual dinner had become an occasion for the gas bags of the profession to let off their fads. He wished to remind them that he was not one of the anæsthetists, he had no fads, and he knew nothing about politics: he would therefore only say a few words. Most of those present, indeed all of them, would remember their modest former home; when he first visited it he went into a little room at the back where extractions were done, and on the floor he saw a bag labelled "jaw dust," that gave him a very gruesome first impression of the place, but he found out afterwards it was only saw dust, the curly part of the *s* having got worn out. Those early days had gone by, and now they were thoroughly installed in their new hospital. He doubted if there was a better hospital in or out of London, certainly for its size. A short time ago a gentleman came over from the Continent after visiting the hospitals there to do the same with the hospitals in London, and on leaving the National Dental Hospital he said that it was the best he had seen so far, and he, the Chairman, might say that the work was quite in keeping with the building. They knew the work that was done there, and he would make but one further remark in this connection, viz., that a strenuous effort was being made to prevent the charity being used, or rather abused, by patients who could afford to pay for their teeth elsewhere. At a professional gathering like this they must not forget that a large part of the practice was done by laymen. Hospital boards were not unfrequently looked upon as a body of old fogies whose sole business was to interfere with work they did not understand; but were it not for those gentlemen who understood finance their position probably would not be what it was. Of course, the real work of the hospital was done by the dental staff, assisted by the students. Their dental staff was composed of men in the first rank of their profession, men who were busy practitioners and yet were able to give up a considerable part

of their time to the work of the hospital, and so regular and punctual were the staff in their attendance that it had been thought well to start a book in which to record that punctuality, so that it could go down to posterity as an example. Then they had the anæsthetists—who were, he supposed, the real gas bags of the profession—the house surgeon and assistant house surgeon. The house surgeon was a man who loved work, and was never so happy as in the holidays, when the out-patient rooms were chock full, and there were no students to help him. A great part of his toast was the students; unfortunately his personal knowledge of them was not very great, but he did know that they were a hard-working set, and he thought this was shown by the way in which they had distinguished themselves at the hall by the sea—he meant the examination hall by the river. During the recent examination they had sent up fourteen candidates, and thirteen had passed. Not only were they good workers, but they were thoroughly good fellows. He had alluded to the various parts of the hospital, but what was the use of the various parts without a co-ordinating centre. They all knew Mr. Spokes—everybody knew Mr. Spokes—and they knew what a distinguished position he held in his profession. He thought they would agree with him that he was the right man in the right place, and he was the right man to conduct the hospital and school to further successes. He coupled the toast with the name of Mr. Spokes, their Dean.

Mr. SPOKES, in responding, said the hospital continued to do very excellent work to the suffering parts of North and North-East London; that was its natural geographical position and limit of usefulness. Reference had been made to the lay committee. They gave up a good deal of their time in the working and conduct of the hospital, and he must say, on behalf of his colleagues and the teaching staff, they recognised the endeavours of the lay committee to meet the wishes of the staff. He imagined a new departure would be required in order to comply with the needs of the new curriculum, radical and conservative. He did not propose on this occasion to say anything about the abuse of the charity, except that they were most anxious no abuse should take place. With regard to the school, he could only say that they gave their best endeavours to the instruction of the Hospital. The hospital and school were absolutely dependent one upon the other, and therefore it was most important that the lay committee and teaching staff should work in

complete harmony. Sir James Sawyer told an audience in Birmingham that one of the things to promote long life was to limit ambition. Now, what applied to the individual also applied to a corporate body. It was possible to go a little too far, and if they limited their ambition they might live to a ripe old age. They were not a large school, but their aim was to try to be one of the best, and he thought they might rightly claim to be.

Dr. MAUGHAN proposed "The Past and Present Students."

Mr. L. CANTON replied on behalf of the former, and Mr. Must on behalf of the latter.

Mr. SPOKES then gave the "The Health of the Visitors."

Mr. JAMES SMITH TURNER, in the unavoidable absence, through illness, of Mr. David Hepburn, replied: If politics had been indulged in that evening it had not been by the older members of the profession, but the gentleman who responded for the present students had touched upon that subject with a certain amount of freedom and insight which did credit to the students of the present day. It was a happy thing that they had the opportunity, and he took it as a good sign not only that they had the opportunity to ventilate their views, but that they also knew how to ventilate them. There was not a visitor who had not been charmed with the hospitality extended to them, nor one who was not delighted with the success which had attended the students at the recent examinations. For his own part he had a very kindly feeling for the Hospital.

Mr. RUSHTON, in proposing the health of the Chairman, said: "A school board child, on being asked which was the most important canal in the Kingdom, replied, 'The alimentary canal.'" Whether this was the result of moderate or progressive policy he did not know, but he certainly thought the answer was a correct one. The influence of normal digestion upon the mental faculties had been alluded to by Ben Brierley, the Lancashire poet, who said, in his homely phraseology,

"There is nought like beef for settling folks, it makes the hair lie flat,"

and certainly, as he gazed upon the faces round him, although they might differ from each other in classical beauty, they all resembled each other in the calm and settled look of post-prandial content. He had thought that even if their digestions were not pursuing their normal course, if their internal affairs were like those of Crete, in an unsettled condition, and if each particular hair present stood on end like

quills upon the fretful porcupine, they would still give him a patient and sympathetic hearing for his toast. Mr. Roughton was too well known to most of them to require any eulogy from him. Their gratitude to Mr. Roughton was of a threefold nature : First, as honorary visiting surgeon his ready help and surgical skill were always at the service of the patients of the hospital ; secondly, as surgical tutor, he, in connection with Dr. Maughan and Mr. F. S. Rose, prepared the students for the examination at the College of Surgeons, with what success their records at recent examinations abundantly showed. Mr. Rudyard Kipling, in writing of Lord Roberts, said :—

“ He is little, but he's wise,
He's a terror for his size.”

They were not a large hospital, though he would not say they were a terror for their size ; but he would say that their aims and those of Lord Roberts of the army were identical, viz., efficiency and *esprit de corps*.

Mr. ROUGHTON briefly replied.

During the evening there was an interesting entertainment programme, including a diverting ventriloquial sketch by Mr. Fred Russell and some very clever conjuring tricks by Dr. Herschell, one of the guests.

THE DENTAL HOSPITAL OF LONDON.

THE staff, students (past and present) and friends of the above hospital dined together at the Hotel Metropole on the 4th ultimo. The company numbered about 170, and among the guests were Mr. F. A. Bevan, Professors Watson-Cheyne and Smith-Woodward, Mr. J. Smith Turner, The Dean of the National Dental Hospital, Dr. Walker.

Mr. ARTHUR S. UNDERWOOD presided.

The toast of the “Queen” having been duly honoured, the Chairman, whose rising was greeted with great cordiality, said, Gentlemen, I feel, in addressing you as past and present students, and in asking you to drink the health of the “Past and Present Students,” a little unfortunate on one score—I have so often addressed past students, and this is not my hour for doing it. My usual time, when I feel able to do it properly, is eight o'clock in the

morning, and as I am so very much too late you will forgive me for any want of success on the present occasion. Of course, in common with everyone who has filled this chair, I looked forward with hope that I might some day fill it, and now I feel proud that the honour has been conferred upon me by my colleagues and my *confrères*, that is to say, by those who know me, and I consider it a very great honour indeed. Of course, when it was first suggested to me I turned over in my mind, in fear and trembling, how I should deal with a toast that had been so often and so ably dealt with before, and I thought I should do best to confine myself entirely to the subject of the toast—The *health* of the Past and Present Students. Now, there is a proverb “early to bed and early to rise”; I think I did a little to encourage these habits of health during 13 years of lecturing; I did not know when my students went to bed—of course I could not know. However, I did something towards their health in the way of early rising. The importance of the health of the past and present students of dental surgery is very great, and, perhaps, greater than at first sight might appear. It has been said by Voltaire that troubles in the digestive tract lead to all the great crimes that are committed, and I am quite sure that the history of such people as Attila and other notorious criminals would not have been written so black as it has been but for this fact. Perhaps if the author of the “Ride to Khiva” had been deprived of the benefit of Cockle’s Pills he might, with his energy and genius, have done very great harm to the community. If the health of students of dentistry were to give way the digestion of the world would suffer, and no doubt we should be plunged in disastrous wars such as the world has seen no parallel to. I need not say that work is conducive to health, but I might say that play is also a good thing for the health. It is a very bad thing when students eat, drink and sleep dentistry. It has been said, “Beware of the man of one book.” When I was a little child I thought the book this man went about with was Wood’s “Natural History,” and that out of its pages he confounded all disputants, and later still, as I grew older, I began to think that it was not because he demolished all the people that he argued with that we were to beware of him, but that he himself was a very intolerable bore. Not even Gray’s “Anatomy,” not even Humphry on “The Skeletons,” not even Tomes’ “Anatomy,” by themselves are sufficient for the needs of man. I once knew a man who had only read one book, he had read “Three Men in a Boat.”

He was a grown up man, and I do not believe he could pass a creditable examination even in "Three Men in a Boat." Well, then, it must not be one book. Every man should have a hobby ; let him take an interest in sport—I mean such sports as we engaged in ourselves—cricket, football and all such sports. I do not mean those sports which have their value in a monetary sense. I know there are some people who expect to make large fortunes by them, but those who make large fortunes are not the people who spot the winners ; such sports should be left to kings and millionaires. But the good sports—the sports we have already made ourselves fairly conspicuous in—are very necessary to our health. But then, there is another point to consider with regard to our hobbies. Of course, we all think we are going to lay by something, and most of us when we are young think we are going to lay by money ; I have even heard some say that they have done so, but unless we also lay by a little health and a pursuit to take the place of work, we fall like a pack of cards, or like the cab horse who could not be let out of the shafts lest he might drop down dead. If the cab horse had had a hobby he might have had a better end. Let us follow our hobby to the bitter end, and in proportion as we follow it we shall do the other work better. I do not believe a bit in the man who only knows one kind of thing, and I believe the best past and present student will be the man who has some other thing behind him. Of course, gentlemen, you know that no one attains to the position with which you have honoured me without being well stricken in years, and of course I have a vast fund of reminiscences. I know it is the right thing to indulge one's audience with recollections of things that happened in the Dark Ages, but I do not propose to follow that course, though I find as I grow older the faculty of remembering increases, and I think if I were put to it I could remember with anybody. There is one great memory that for the present hides the rest of the past, it is the vivid recollection of the 13 very happy years which I passed lecturing to you. I daresay after a few years I may be able to see behind that, and perhaps another occasion may place me in the position of relating them. But, one thing I learnt : while I thought I was teaching dental anatomy and dental physiology, I really was imbibing an admiration, belief, and love of dental students, an affection which I shall retain until my dying day. Now, gentlemen, I have to couple with the toast the names of two gentlemen. Perhaps they will tell you

something about me, but whatever they say I am sure it will be laudatory. I give you the "Health of the Past and Present Students," coupled with the names of Mr. Frank C. Porter and Dr. T. H. Miller, and cannot better conclude than by saying in the trite old phrase "It is the proudest moment of my life."

Mr. F. C. PORTER, in responding for the Past Students, said, "He is strongest who stands alone," was a truism which had fallen from the lips of not a few, but such a man must suffer from what Dr. Johnson called "stark idiocy," or else have never stood alone, as he did at that moment, to respond for the toast which had been proposed in so witty a manner by the chairman. He felt himself in a position of extreme delicacy, not to say difficulty, for he stood there to answer for a body of men "with a past"! He was sure they looked upon their past connection with the Dental Hospital—teeming with memories more happy, perhaps, than any other in their lives—with the greatest satisfaction. Far, indeed, from wishing to bury their past, they would link it with the present, and he knew of no better series of connecting links than these annual gatherings round the festive board. On such occasions they revisited their old haunts and renewed their old friendships. After a few years spent in the world their old illusions and old ideals vanished and evaporated. It seemed to him but a few years since he was ushered into the presence of the council chamber of the gods, the sanctum sanctorum, but in those few years he had found that the chamber was not the chamber of the gods, and that the councillors were men like themselves. When the first shock of disillusion was over they found that they were men who had had the same difficulties and the same obstacles to overcome, and in overcoming them had shown them what were the dangers to be avoided. In thinking of the Dental Hospital and its daily routine of work, they could not disassociate from it the body of students ever ready to do the work that was required of them. Each generation followed on the other so quietly, so evenly, that that body seemed to assume a personality to which each student seemed to belong, and in belonging to was honoured. He again thanked them for the kind manner in which the toast had been received.

Dr. T. H. MILLER, replying for the Present Students, remarked, that if the reception to a paper he had recently had the privilege of writing on the subject of the admission of ladies to dentistry might be taken as an indication, it would not be long before the

gentleman who had to respond for the toast would have to say ladies and gentlemen. He had been making inquiries as to what was the proper thing to say, and one of his friends replied, "Oh, say something nice about Leicester Square," but it seemed to him that was like taking oils to Athens. It was one of their articles of belief, in fact the main one, and the only shadow on the bright picture was that they could not remain there always.

Mr. WATSON CHEYNE proposed the "Hospital and School," coupling with it the names of Mr. F. A. Bevan and Mr. Le Matheson.

Mr. F. A. BEVAN, who was enthusiastically received, said he was at a loss to understand why his name had been received with so much kindly feeling, but if it was on account of the interest he had taken and always felt in the Hospital, he could assure them their cordiality had not been misplaced. He could remember Mr. Thomas Rogers coming to his father and asking him whether he would be Treasurer to the Hospital, and his father took a great interest in the Hospital to the day of his death. Mr. Bevan then proceeded to refer to the difficulties, their hard work and their hopes with respect to the new hospital, mentioning particularly their indebtedness to Dr. Walker, whose zeal and indefatigable labours had been unceasing.

Mr. LEONARD MATHESON, in responding for the School, said that the hearty manner in which the toast had been received only showed what one knew before, that the School and Hospital—and they were almost interchangeable in their minds—had still a very strong hold upon the affections of them all. Speaking of the cordiality existing between the staff and managing committee, he might, in parenthesis, say how glad they were to see present members of other schools, for it should be borne in mind they were all working together with the same end in view. He might be allowed to say how heartily they congratulated the National Dental Hospital on their late great successes. They were all working together with the same object—and when he said they, he meant not only the staff and teachers, but also the students—to spread abroad not only men trained technically, but men of open and eager minds, of ready sympathy, men who had a horror of anything which was insincere or indicated carelessness in work, men who in all parts and departments of their lives were honourable and chivalrous gentlemen. They had to fight, particularly those who lived in the

metropolis, against the charlatan. A good many up and down the country thought it was to be done only by legislation. Legislation, no doubt, was a formidable weapon to fight quackery with, but he thought they would agree with him, that the best weapon was the educated and cultivated dentist. Their School had an honourable past, and they hoped to have an honourable future, and he would say, that such meetings as these, giving an opportunity for exchange of views, sympathy and co-operation, did much to secure that end.

Mr. STORER BENNETT proposed "the Visitors," on behalf of whom Mr. SMITH WOODWARD replied.

The "Health of the Chairman" was proposed by Mr. CHARLES S. TOMES, who said, that in connection with the School, he and the Chairman stood in relation to one another very much the same as "Box and Cox." Some years ago, when he began lectures on Anatomy, Mr. Underwood was one of his pupils; later, Mr. Underwood succeeded him as a lecturer, and now he had again taken his place. He hoped the time would come when Mr. Underwood, who had already done so much in the cause of research, would be able to resume his labours in that department. The toast was received with great enthusiasm, accompanied by musical honours, and the Chairman briefly replied.

The entertainment programme fully sustained the high reputation the Dental Hospital of London has long enjoyed, and greatly added to the pleasure of the evening.

NATIONAL DENTAL HOSPITAL.—The Past and Present Students' Invitation Subscription Dance will be held at the Holborn Restaurant (Throne Room), on Friday, January 21st, 1898. Tickets, 7/6 each inclusive, may be obtained of W. H. Must, Hon. Secretary.

THE following gentlemen having passed the necessary examination have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons in Ireland:—H. M. Chapman (Dublin); D. Craig (Londonderry), and K. A. Daman (Birmingham).

WE understand that the Metropolitan Branch of the British Dental Association propose to meet at a dinner to be held at Limmer's Hotel, George Street, Hanover Square, on Thursday, January 27th, at 7 p.m. Tickets, 7s. 6d., can be obtained of the Hon. Secretary, 37 Queen Anne Street, W.

THE DENTAL RECORD.

VOL. XVIII. FEBRUARY 1ST, 1898.

No. 2.

Original Communications.

EFFECTS OF VARIOUS TRADES ON THE TEETH.*

By S. C. SMITH, M.R.C.S., L.R.C.P.

MR. PRESIDENT AND GENTLEMEN,—When first requested by the Honorary Secretary of our Society to read a paper at one of these meetings, I consented, in the expectation of being able to take the subject of “Bacteria in Relation to Dentistry,” but finding that the cultures of the organisms, which I should have liked to exhibit, required more time than I have at my disposal I abandoned it in favour of one which I will term “The Influences of Occupations on the Teeth,” although I must occasionally make reference to other structures of the mouth. The early decay and loss of teeth is nowadays a matter of great speculation among the public, and from personal experience, I fancy there are no taunts hurled at the unoffending medical practitioner more frequently than that it is through “taking so much medicine.” There may be much truth in the idea that it is caused by drugs, as, for instance, when people dose themselves for a prolonged period with perchloride of iron—“steel drops” as it is popularly termed, without sufficiently diluting it; but, as I hope to be able to show, the cause of loss of teeth is sometimes due to the trade in which people are engaged.

I will first of all deal with occupations in which lead is used—either in the form of the metal itself or of one of its salts, and where it is possible for it to find its way into the system, the entry being effected by way of the skin or lungs, or both. The trades in which lead poisoning chiefly occurs are the white lead making, plumbing, painting, file making, and where a salt of lead is used for glazing purposes; the potter also is liable to the disease. There are several other kinds of work where plumbism occasionally arises—pewtering for instance—but for a typical case of the malady one may look to

* A Paper read before the Students' Society of the Dental Hospital of London.

the white lead manufacture. "Wet grinding" of this substance is now adopted, but before the process came into general use, the atmosphere of the works was always fouled with fine white lead dust, so that it was either respired, or, when deposited in the mouth, swallowed with the saliva, or if it fell upon the skin absorption by the cutaneous glands took place.

The oral symptoms to which the disease gives rise are—marked fœtor of breath, the odour being variable, but always suggestive of putrefaction, the tongue is thickly coated with fur, and the teeth with tartar, if the patient has not paid due regard to the hygiene of his mouth. At the edges of the gum, immediately adjoining the teeth, a blue line is to be seen, sometimes better marked in one jaw than the other, and in the area of the front teeth rather than in the molar region. This blue line in the substance of the gum is chiefly determined by the amount of tartar present, for in cases where the teeth have been kept scrupulously clean it is either absent altogether or very faintly discernible. Where the teeth are wanting there is no blue line. Its formation is due to the deposit of lead sulphide in the capillaries of the gums, small quantities of food containing sulphur cling to the teeth, and when decomposition sets in sulphuretted hydrogen is emitted, which unites with the lead in the blood vessels of the gums, the latter being more or less congested. Of itself lead poisoning is not commonly regarded as a cause of loss of teeth, but I submit that it is so, for the following reasons:—In the first place, the presence of the metal in the system causes general illhealth, the tissues waste and the patient becomes emaciated, showing that the body is under some influence in which nutrition is impaired, and if general nutrition is imperfect, it follows that local mal-nutrition must have its effect on the teeth. In the second place, as I pointed out when speaking of the fœtor of the breath, there are gases (and perhaps fluids) present in the mouth, evolved from decomposing *débris*, whose action almost certainly tends to destroy the dental enamel. Lastly, periostitis is present, caused by the tartar, &c., round the necks of the teeth, and the gums are in a congested state, and as the nourishment of a part is always interfered with where congestion is present, the teeth must necessarily suffer.

Added to all these agencies, are the grave constitutional disturbances caused by plumbism, but into purely medical details I do not

propose to enter, as I wish to limit my remarks, as nearly as possible, to matters in connection with the teeth only. To the dental surgeon the chief point of interest in the treatment of plumbism is careful attention to the hygiene of the mouth ; by means of the tooth brush, and in the white lead trade instructions are given to all the workpeople of the necessity for taking this precaution. They wear respirators to guard against the inhalation of white lead dust, and a cloak, reaching from head to feet, to prevent its deposit upon the skin, which must be kept in a healthy state by the free use of the bath, the hands must be well scrubbed with a brush, and the spaces under and around the nails kept free from dirt. Meals should never be taken without first washing the hands in this way, so that particles of the poison may not be conveyed to the mouth, and, finally, meals should never be taken in any building where the work is actively proceeding. These are the lines on which preventive treatment is carried on in all the trades connected with lead, but I need not here enter into the medicinal treatment, so I pass to chronic mercurial poisoning.

This malady prevails among those who are exposed to the vapour or dust of mercury or its salts, which certain trades involve. Mercurialism, therefore, is found among quicksilver miners, looking-glass makers, barometer and thermometer makers, furriers and bronzers. The disease causes an interesting series of symptoms in the mouth. First of all there is salivation, the mercury acting as a stimulant to the salivary glands, resulting in an enormous increase in the amount of saliva secreted. The gums are at first very tender, and then swell and become spongy, so that they tend to conceal the teeth. Mercury is an irritant to the periosteum, and, therefore, inflammation of this membrane is set up, and in the worst cases of the disease sloughing of the gums and necrosis of the jaw may take place. The teeth themselves get discoloured, and look as though corroded by an acid, but the cause of their loss is the interference with their blood supply through the inflamed periosteum, so that after a time they get loose and then fall out, absorption of the alveoli and recession of the gums taking place meanwhile. Here, as in the case of lead, I ought to mention how little of the poison is, in some people, sufficient to cause well marked symptoms of the disease, for although the severity of mercurialism depends upon the length of time the system has been absorbing it

in one way or another, there are some recorded cases where patients who have been given medicinal doses of the drug—as of the blue pill or calomel for instance—and they have exhibited signs of the malady after the administration of quantities which, in other people, would have failed to produce any effects whatever.

The treatment of mercurialism is on the same lines as plumbism. Respirators should be worn where either the vapour of the metal or the dust of one of its salts is the paramount danger, and the workshops ought to be thoroughly well ventilated. A protective covering for the whole body is likely to be of the greatest possible service, because mercury easily finds its way through the skin into the system. Lastly, as in other dangerous trades, it may be necessary to advise the patient to give up his occupation, especially where it is seen that he has an idiosyncrasy for mercury.

The next disease—chronic phosphorous poisoning—with which I will deal, is of less frequent occurrence than the two preceding ones, but even now, with all the improvements that have of late years been introduced for its prevention, cases do sometimes occur. The operatives of the lucifer match trade are the chief victims, yellow phosphorus being the material with which they are concerned, and it is by inhalation of the fumes of this substance that the disease is caused. Its most important pathological condition is necrosis of the jaws, one jaw being equally as much affected as the other, although it was formerly supposed that the lower jaw was more frequently attacked than its fellow. Phosphorus vapours act locally on the bone wherever the latter is denuded of its periosteum, but in the case of the maxillæ, as long as they are protected by mucous membrane, no disease occurs. This fact is of the greatest interest to the dental surgeon, because it will readily be seen that if the lucifer match maker be not possessed of sound teeth, the fumes may find their way through stumps or carious teeth with exposed pulps to the bone. Experiments have been made on rabbits, proving that when the teeth and jaws were sound no symptoms of phosphorus poisoning developed after exposure of the animals to phosphorus vapours, but necrosis was caused by extracting some of their teeth (thereby exposing the jaw bone) and then submitting them to the same influences as before. The ascending ramus of the lower jaw is not affected by the disease. The first signs are marked swelling and tenderness of the gum, and then as the periosteum is

attacked, pain causes the general health to suffer, and necrosis of the jaw supervenes. Digestion fails because of imperfect mastication of food, and the inflamed soft parts often become gangrenous; the teeth meanwhile become loose and then fall out. The separation of the dead portion of the jaw occupies many months, and the treatment must therefore be directed to keeping the mouth in a hygienic state as far as possible during that period, and for this purpose an antiseptic mouth wash of Condyl's Fluid may be employed, and then, when the sequestrum of bone is quite loose, an effort should be made to detach it. Obviously, the suppuration occurring in this disease is difficult to treat, because the pus which is not expelled by the mouth is either swallowed—causing all sorts of digestive troubles—or else it tends to burrow its way to the surface of the face, causing unsightly fistulæ. The best preventive measures are, firstly, the employment only of those men who have sound teeth, and then to have those teeth examined from time to time by the dentist; and, secondly, to secure free ventilation in all parts of the places where lucifer match making is carried on.

I will now pass from chronic metallic poisoning to less formidable conditions destructive to the teeth, but although these conditions are less serious and more prolonged in their action, their effect is none the less certain. Among millers, bakers and flour dealers there is always a liability to caries of the teeth, because the atmosphere in which these people carry on their business is laden with particles of flour, and, when inhaled by the mouth, some of them adhere to the teeth, and being very liable to fermentation, on account of the action of the bacteria of the mouth, lactic acid is formed, which has a softening effect on the dental enamel. When once the enamel is destroyed, the rest of the tooth structures fall an easy prey to the fermentative processes, the phosphates of the dentine serving as a pabulum for the micro-organisms.

The fermentative processes are likewise responsible for dental caries among confectioners, sugar tasters, and people who are given to eating large quantities of sweets (although the soft, pulpy sweets of the present day are perhaps less likely to be injurious than the harder materials of years ago); but there is this difference between starchy and saccharine substances, the former, being insoluble, sticky and gum-like, are able to cling round the teeth and remain there, whereas sugar is readily dissolved by the saliva and swallowed.

Lactic acid of starch fermentation is more likely therefore to be kept in the mouth, exerting its injurious effect on the enamel from the moment of its formation.

If the vegetable acids are capable of so much destruction, it will be seen at once that the corrosive mineral acids are more powerful still. A few weeks ago I saw a man in the extracting room, who was seeking advice about his teeth, which I noticed were rough, jagged and worn down to about one half of their normal length beyond the gum, I asked him what was his occupation, and he informed me that he was a coppersmith by trade, and that he attributed the destruction of his teeth to the use of hydrochloric acid, the fumes of which he could not entirely avoid inhaling, and also that his colleagues in the workshop all lost their teeth in the same way. I have had no personal experience among operatives in the manufacture of mineral acids, but it is only reasonable to suppose that, as in the case of the coppersmith, those whose branch of the trade renders them liable to the inhalation of acid vapours are likely to have their teeth destroyed through the softening of the dental enamel, which will be followed by its being easily broken down when hard substances are being masticated, and then the dentine is exposed. Continued inhalation of the noxious vapours will cause dissolution of the dentine, and this chemical process, coupled with bacterial action, is more than sufficient to destroy the teeth. Although rather a matter of interest in the study of public health, I may here very briefly refer to some of the provisions of the Alkali Works Act, which has for its object not only the care of those who work in the alkali trades, but also of those engaged in the manufacture of sulphuric, nitric and hydrochloric acids. For instance, not more than one fifth of a grain per cubic foot of air or smoke must be allowed to pass from the works into the atmosphere, and no less than 95% of the hydrochloric acid gas evolved must be condensed, the Act requiring that the noxious gases developed be rendered harmless, either by extreme dilution, or mechanical contrivances. The acid gases of sulphur and nitrogen are also dealt with, and a permissible limit for passing into the atmosphere is stated. I do not for a moment suggest that the Act was passed solely with a view to preserving the teeth of the workers in these trades, but here, as in the case of lead poisoning, there are points which make the matter interesting to the dental student.

Among armies on active service, and sailors during a long voyage, before communication was as rapidly effected as now, scurvy used to break out when the supply of fresh vegetables had been exhausted. This disease caused among other symptoms enormous swelling of the gums, so that they found bulky masses round the teeth, sometimes completely enfolding the latter from view. The extreme congestion was liable to end in ulceration and sloughing of the gums, causing the teeth to loosen in their sockets and then fall out. Hæmorrhages from the mouth formed a common symptom of the disease. It is not often seen nowadays, because the cheapness of vegetables places them within the reach of all, and among sailors the Board of Trade requires the free distribution of lime juice for their consumption when vegetables are not procurable. In conclusion, gentlemen, I trust that I have brought a few features of interest before your notice this evening from a dental point of view, because I have all along feared that my paper might have too medical an aspect, and I thank you for the patient hearing you have given to my remarks.

DEBATABLE POINTS IN ANÆSTHETICS.*

By W. H. GILMOUR, L.D.S.Eng.

MR. PRESIDENT and GENTLEMEN,—At the commencement of my qualified career, in fact when house surgeon at the Liverpool Dental Hospital, I received a rude awakening to the great importance of the results of anæsthetics by being present at a death from chloroform given for a dental operation, and also from some experience in the coroner's court, having to submit, as a witness, to the questioning of the coroner and jury, a position I by no means enjoyed. Shortly afterwards I went as assistant to a dentist in France, and there for some time experienced the delights and benefits of a dental practice practically without anæsthetics. On my return to England I was confronted with the frequent reports of deaths from anæsthetics (principally chloroform) both in general and dental practice, one of which occurred so near home as Liverpool. So that, when the Secretary asked me if I would read a paper to this society, it occurred to me that one on the debatable points in anæsthetics would be sure to stimulate a healthy discussion on anæsthetics in dental

* A Paper read before the Liverpool Odontological Society.

practice. I do not intend in any way to go into the history of anæsthetics, but to run over the different methods of producing anæsthesia that are commonly employed in dental practice, then to discuss the principles which would guide one in the choice of the anæsthetic and the responsibilities and consequences to the dentist in cases of fatality.

Anæsthetics may be divided into local and general.

Local Anæsthetics are those which abolish the sensibility of the peripheral nerves of a particular area.

The *General* are those which act on the central nervous system, and abolish sensation throughout the body.

Local Anæsthesia has been obtained with more or less success in three ways, viz. :—

- 1.—By cold ;
- 2.—By electricity ;
- 3.—By drugs painted and injected at the situation desired to be rendered anæsthetic.

Anæsthesia by cold is brought about by using sprays of highly volatile substances, which, impinging on the mucous membrane cause so rapid an evaporation from its surface that its heat is abstracted with sufficient rapidity to numb the part, thus paralysing the terminations of the sensory nerves. Of these the best form perhaps is chloride of ethyl. The anæsthesia is confined to the mucous membrane, and is very transient, so that except occasionally for making small incisions into the mucous membrane, opening up abscesses, and sometimes to allow of the removal of small stumps hanging on to the gum—they are not much use. The use of too much of these has sometimes caused unpleasant constitutional effects.

Inducing anæsthesia by electricity has lately been tried by cataphoresis, but the results are not yet certain.

Of the third method hydrochlorate of cocaine has been the most used, and is employed in two ways, by painting a solution over the mucous membrane, which is sometimes useful in alleviating the pain of making small incisions into the mucous membrane, and for tying ligatures round the necks of teeth when fixing on the rubber-dam. By sub-mucous injection: I have seen teeth removed without pain by the use of this method, but have really had no experience, and from the experience related to me by very competent operators I am not very keen on employing it. It has a marked depressing action

upon the heart, several fatal cases have occurred, and there seems to be no means of ascertaining what will be the poisonous dose in any individual case.

I shall now take up the general anæsthetics commonly employed: Nitrous oxide, nitrous oxide and oxygen, ether, nitrous oxide and ether, and, lastly, chloroform. Nitrous oxide might be termed the dentists' anæsthetic, and although its introduction has been a great boon to patients and dentists, nothing by its abuse has tended so much to ruin pure dentistry, or has created so many quacks and so much advertising. It is easy of administration and seems to be practically safe. Most patients have little objection to inhaling it, and by one administration several teeth can be removed, and by several administrations all teeth could be removed, leaving little need for the use of any other anæsthetic. Nitrous oxide, when inhaled pure, enters the blood by diffusion through the thin walls of the air cells in the lungs. In the blood a small quantity is dissolved, but the bulk is connected in some loose way with the blood constituents. The blood parts at once with its nitrous oxide when left in free contact with air. There is very slight danger of heart failure from inhalation, more attention being required for respiration than the pulse. It is seldom contra-indicated. It may be given with care to old and young, and even to patients with heart disease, but it is probably contra-indicated in extensive lung disease. I would strongly urge that it should not be administered soon after a meal, and that the respiratory movements of the chest and abdomen should not be impeded by the clothing. I have generally found that when administered on an empty stomach, and in the forenoon patients take it much better, and on recovery feel more satisfied with the anæsthetic. Here I should like to impress that a full anæsthesia should be produced and also that too much work should not be attempted. Many patients complain that they have felt the pain of the extraction, and I think this is due very often to extracting without perfect anæsthesia, or, when the anæsthesia has been perfect, the operator continuing work when sensibility is returning. Patients at these stages feel pain much more acutely than under normal conditions, and this very often leaves the impression that nitrous oxide does not in any way help them. Then, again, the gag should be so adjusted that it does not press unduly on the gums, and also that its removal should not be

attempted too soon, because if there is a difficulty many patients run away with the idea that you are removing a tooth. The addition of oxygen to the nitrous oxide is now becoming very popular, the advantages claimed for this mixture are that no jactitation or lividity occurs, but inasmuch as these are the chief indications of perfect anæsthesia I fail to see that their absence is a great benefit, I, however, have not yet had any experience.

When a more prolonged anæsthesia is required a medical man will have to be employed, but since the dentist shares with him the responsibility, it is essential that he should possess some knowledge of the agents employed.

Ether possesses a disagreeable smell and taste, and after the first few respirations the air should be saturated with the vapour.

As well as being a general anæsthetic, ether also acts locally on the mucous membranes with which it comes in contact, and causes their secretions to be increased, so that the mouth tends to become filled with a ropy saliva ; it is also necessary to remember that the evaporation of the ether cools the air entering the trachea and bronchi, and may set up catarrh or even bronchitis.

Ether is a stimulant, but, like other stimulants, if pushed too far depresses. The respiration and heart's action are increased, the blood pressure raised and the vessels dilated, so that the face is red and the tendency to bleeding is increased.

In cases of poisoning, the respiration ceases before the heart. A few cases of fatal syncope have occurred at the commencement of the inhalation. Elimination takes place rapidly, so that when the administration is suspended consciousness pretty rapidly returns.

It is best for dental purposes preceded by nitrous oxide, in this way the patient is spared the disagreeable taste and smell, becomes more rapidly narcotised, and the tendency to struggling is diminished : this being best accomplished by a Clover's Gas and Ether Inhaler. If the patient is narcotised in the ordinary way by nitrous oxide, then the face-piece is removed and replaced by an ordinary ether inhaler, I have noticed that there is sometimes a slight return to consciousness and a good deal of coughing. If a second administration of it has to be given, it is advantageous to bring the head well forward, so that the saliva and blood may run out into the inhaler ; for this purpose Ormsby's inhaler has an advantage over Clover's.

One drawback to ether is the liability to the after complication of pulmonary trouble consequent upon the irritation of the lungs from the ether vapour and the hyper-secretion that is produced. There are certain diseases which contra-indicate the administration of ether, notably chest complaints and kidney disease.

Chloroform is undoubtedly the pleasantest, cleanest and most convenient agent for producing prolonged anæsthesia, usually administered on a small flannel inhaler held in front of the patient's mouth, allowing of a plentiful supply of air, more than four per cent. of chloroform vapour being dangerous. It differs from ether in having a depressing influence on the heart's action and producing a marked lowering of the blood pressure, so that the tendency to bleeding is diminished and there is no increased flow of saliva and other secretions ; moreover, it is quite unirritating to the lungs. Syncope may occur within a very short time after the commencement of the inhalation or at a much later stage. The Hyderabad Commissioners maintain that death from chloroform results primarily from respiratory failure, but there can be little doubt that in the human subject death from cardiac failure has occurred.

When death occurs at the commencement it is unavoidable, but at the later stage it is probably avoidable, and by artificial respiration the patient may recover. Death occurs at any time and any where, so that a death might occur during the administration of an anæsthetic without in any way being due to the anæsthetic.

Some one came to the conclusion that bed was the most dangerous place to be in, since the vast majority of people die there and his main endeavour was to avoid going to bed. This, in a way serves to show the fallacies one may fall into in being guided by statistics and the care that is necessary to interpret them correctly.

In studying the statistics of deaths from anæsthetics one must bear in mind that there are few of them that are thoroughly reliable, and that a vast amount of anæsthesia is induced of which there is no record, but that one hears of almost all the deaths.

The death rate from nitrous oxide is said to be 1 in 100,000 administrations ; Ether, roughly speaking, 1 in 22,000 ; Chloroform, 1 in 3,500. The deaths from nitrous oxide are so infinitesimally small that they may be ignored. Small as they are, accidents and want of attention to the tightness of the patient's clothes account probably for most of those recorded.

Ether, and with this I would include gas and ether, is credited with 1 in 22,000 ; roughly speaking, this is a very good record, no dentist is likely to have so many cases in a life time.

We must bear in mind there are deaths in the chair, and it is pretty certain that this rate is considerably raised if we took into account the deaths from complications arising after the administration, and it is possible that it might rise to the level of chloroform. But it is deaths in the chair that the dentist has most to fear ; of course, provided that the dangers from after effects do not increase the risks beyond those from other agents.

The rate for chloroform is about 1 in 3,500, many of those being immediate deaths from syncope.

When death occurs at the commencement of the administration, I have, with others, been struck by its suddenness, there being no time or chance of preventing it.

It is quite fair to assume that if the death rate from dental operations alone were considered, it would be still higher on account of the unfavourable position in which the patient is placed. On the other hand, it may be less, when we consider that the dental patients are usually more healthy, and the dental operation is short and uncomplicated by shock.

As far as I can make out, there is nothing in the law (of this country) to prevent a dentist giving an anæsthetic, and custom has sanctioned the administration of nitrous oxide by him ; a dentist having gained a much greater influence in its use than the general practitioner. In the event of a fatality occurring, if a dentist could show that he had administered gas in a considerable number of cases successfully his position would be very secure. But in the case of other anæsthetics it is essential that there should be a medical man as administrator, the dentist operating ; no one should attempt to administer any of those anæsthetics and operate single handed. It will take all the anæsthetist's time to attend to the patient, leaving the operator free to do his work.

Although the law in this country allows a dentist to administer nitrous oxide, and in this way gives him powers which he should safeguard, this is not the case, at any rate, in France, where no anæsthetic can be administered except by a medical man. This, at first sight, appears to be a disadvantage to the French dentists, but, after all, the question has often occurred to my mind whether it is

really so. Of course, in the majority of cases, to administer an anæsthetic as well as operate works well enough, but all will admit that not unfrequently cases occur when the gain of a few seconds, and to have one's attention solely on the operation, would enable one to do much more work under the same administration. Moreover, the facility with which teeth are extracted under gas by dentists single-handed in this country fosters a carelessness in the public to neglect their teeth and think nothing of having them pulled out and replaced by artificials; whereas in France, the difficulties which are placed in the way of, and the importance attached to the operation of extraction, makes conservative dentistry cheaper than artificial work. This I hold to not only be of advantage to scientific dentistry, but also of national importance.

Who shall be the administrator?—Ideally the best administrator of anæsthetics is the patient's ordinary medical attendant, from the fact that he will know the patient's condition, and be best able to judge what is the best anæsthetic, but unfortunately it frequently happens that he either objects to give anæsthetics or has not sufficient opportunities for giving them to render him sufficiently expert. For comfort and convenience during the operation it is no doubt most advantageous to the dentist to obtain the services of one whom he knows to be an expert anæsthetist, but the objection may be raised that *he* does not know the condition of the patient like the family doctor. But this objection can be largely removed if he is given the opportunity of examining the patient perfectly a day or two beforehand, so that he can adopt any precautions or take any steps for the preparation of the patient he thinks fit.

Who should chose the anæsthetic?—This is a very difficult question to answer. Naturally the anæsthetist, bearing the greater responsibility, has prior claim, but the dentist by his greater experience of this special operation is also qualified to have his say and is very immediately concerned, since should a fatality occur it may much more seriously effect his practice than that of the anæsthetist, and in the case of a young practitioner possibly mean ruin—the public only seeming to remember the fact that a death occurred at the particular dentist's house. I hold that a dentist has a right to ask for the anæsthetic he prefers; but should the medical man hold that the state of the patient contra-indicates it, of course

the dentist must give way, then, of course, the responsibility rests entirely with the anæsthetist.

Now comes the question of choice of an anæsthetic suitable for a dental operation, the operation usually meaning the extraction of teeth, and the patient most conveniently being placed in the upright position.

The ideal anæsthetic would possess the following features :—First of all safety ; secondly, ease of administration ; thirdly, be pleasant to inhale ; fourthly, no after effects.

Nitrous oxide has most of these, and there is no doubt in my mind that it is up to now *the* anæsthetic. Although the period of narcosis is short a great deal can be done in the time by an expert operator, especially if he has the assistance of an administrator, and by its administration several times it is quite possible to remove all teeth that require extraction. It is the safest and most pleasant, and a great point in its favour is that the patient regains his ordinary health invariably on the return to consciousness. Unfortunately in private practice I have found that if one cannot remove all the teeth in at most three administrations, even though they are separated by several days, one has the utmost difficulty in persuading a patient to allow of a fourth administration, notwithstanding the fact that the patient has not the slightest fear of the anæsthetic—they seem to become quite sick of it.

If, then, one finds that a case presents itself where it is impossible to remove all the teeth in three administrations of nitrous oxide, an anæsthetic with a longer period of anæsthesia is indicated, and the anæsthetic I should choose would be ether preceded by nitrous oxide, preferably administered by a Clover's Gas and Ether Inhaler. By this anæsthetic all teeth can be removed in the one sitting, and although objection might be raised to the increase in the secretion of saliva and the bleeding I have not found that they materially interfere with the operator.

Should, however, ether be contra-indicated by the condition of the patient, chloroform must be used, and for my part I would insist on the patient being in the recumbent position, so that the heart may be relieved as much as possible. The objection to the recumbent position—mainly the difficulty of keeping the throat clear—may be obviated by operating with the head over the end of the table. I should here like to remark that the operator

should carefully examine the mouth and make up his mind clearly what he has to do, and that once the administration has commenced he should not examine the mouth even if in doubt until perfect anæsthesia is produced.

In conclusion, gentlemen, I beg to thank you for your attention, and trust that I have succeeded in raising a few points of discussion on anæsthetics. It is by discussion that we help each other most.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly meeting of the above Society was held on the 10th ultimo, Mr. JOHN ACKERY, in the unavoidable absence of the President, in the chair.

The SECRETARY read the Minutes of the last meeting, which were confirmed.

Mr. W. H. Dolamore, L.R.C.P., M.R.C.S., L.D.S.Eng., signed the Obligation Book and was admitted a member of the Society.

Mr. Frank Harsant, L.D.S., Mr. William Barnabas Woodhouse, M.R.C.S.Eng., L.D.S.Eng., and Mr. Kevin E. O'Duffy, L.D.S. Edin., were proposed as members.

The LIBRARIAN reported the receipt of the "Transactions of the Medical Society of London for 1897."

CASUAL COMMUNICATIONS.

Mr. CHARLES A. CLARKE explained a system he had adopted of inserting gold into mineral teeth. The only object in inserting gold in mineral teeth was to make them look unlike artificial teeth when placed in the mouth. For that purpose it was not necessary to put in large fillings. He cut the teeth with steel discs of various diameters, and used superfine carborundum powder moistened with water. He had some difficulty in starting the gold, but that he had now overcome by a method he had adopted for several years past in ordinary cohesive fillings. He never drilled starting points, but placed in a suitable position a pin-head of cement, on which he placed a small piece of gold, and he allowed the cement to harden. He exhibited several teeth with fillings of different shapes.

Mr. H. LLOYD-WILLIAMS reported two cases of excision of the roots. The first was a girl aged 18 who came to the London Dental

Hospital on October 26th, 1895. The right upper central was chipped at the cutting edge, and the apex, with rather more than a third of the length of the root necrosed, was sticking out of the gum. The tooth was nearly as firm as the left central. That portion of the root that was uncovered was hollow, almost like a quill. There was a history of a fall five or more years ago followed by pain and swelling, but the appearance of the root through the gum had only been recently noticed. The state of the excised portion showed that it must have been exposed a very considerable time. The apical portion was excised as low as possible with a pair of clean cutting pliers, then with a finishing bur on the engine it was ground until the healthy tissue was reached. The pulp canal was opened, thoroughly cleaned and dressed with iodoform. The wound in the gum was washed with 140 carbolic solution and dusted with iodoform. The root canal was filled with osteo as soon as it was rendered thoroughly aseptic. The wound in the gum gradually closed up, until in January there was just a small point of bone still left uncovered. The surrounding tissues, however, were perfectly healthy, and he had no anxiety about the future. The second case occurred in private practice. Seven years ago he treated a dead right upper bicuspid for a gentleman aged 25. The roots were filled with guttapercha, and a large amalgam contour was built up. After going on happily for about four years, a gum-boil appeared, and in March, 1896 the apex of the buccal root protruded. At that time also, the large amalgam failed. The necrosed apex was excised in precisely the same manner as he had already described. The opening of the canal was closed at once, and the root prepared for a crown. A Newland-Pedley crown was fixed; the root was not collared. He was gratified a month ago—October, 1897—to find that the gum was perfectly healed, leaving a depressed whitish scar, and that the crown and root had given perfect satisfaction for 18 months.

There were two points of importance in the treatment of those cases: First that the portion of the root that did not protrude should be healthy, and the second that after excision by the forceps the root should be ground down until living tissue had been reached and just passed.

Mr. H. LLOYD WILLIAMS also mentioned a case of open bite in a man aged 25, and exhibited models of the mouth before and after

treatment. He also referred to a case which came into the West London Hospital last Tuesday, that of a girl supposed to have an alveolar abscess in the left upper jaw. She said that she could not open her mouth; when he induced her just to open the lips a little he found something very peculiar between the cheek and the gums. On holding the cheek back a little he found the end of a rag sticking out. He took the forceps and got out quite a large piece of rag; and that cured the abscess.

Mr. CARL SCHELLING said he happened to see a case the other day which bore on the subject. A gentleman for many years had been suffering intense toothache. The root was excised and extracted, and the patient suffered no more pain; he had got the tooth still in his head.

Mr. H. BALDWIN said the operation seemed to be very successful in the cases in which it was indicated. On several occasions he had excised the necrosed ends of the buccal roots of molars and the tips of the roots of upper bicuspid and upper molars, in cases where there was a large sinus which would not heal, and the necrosed roots were felt distinctly with the probe tube thoroughly separated from all the soft tissues. In these cases after first trying to cure the sinus in the ordinary way he had excised the ends of the roots with a German screw cut fissure bur, and the whole thing had healed up perfectly.

Mr. BADCOCK said he had had several cases of the same sort which had all done very well.

Mr. WILLIAM HERN said that two years ago he mentioned a hospital case and a case he had in private practice. In the case in private practice, he excised the roots of the two central incisors. The roots were not sticking through the gum, but some distance below the gum. The patient had been troubled with chronic gum-boils, and with very large papillæ. The patient came to him asking him to remove the teeth. The patient was a young lady and he did not care to do that. He tried to save the teeth, but he could not get the gum-boils to heal. He put some cocaine into the gum, incised the gum, came on to the root, and with a small fissure bur cut off the points of the roots. Shortly afterwards he hollow-ground both of the roots. That happened six or seven years ago. He had seen the patient within a year and both the roots were firm. With regard to the hospital case, it was combined with a very large cyst.

He opened the cyst, curved a probe around and felt the rough end of the root. In that case he opened the cyst again over the central incisor, came down on the root, and excised it. He had not seen the patient lately. In cases in which the buccal roots of molars and the buccal roots of first upper bicuspid had been found sticking through the gum he had frequently taken an emery wheel or fissure bur and just cut them off with apparently no harm following.

Dr. GREVERS (of Amsterdam) exhibited an ingenious device for attaching clasps and bands to retain artificial plates; exhibiting models and specimens of the work.

Mr. HENRY briefly mentioned a case that had come under his notice that morning, where a very well developed supernumerary incisor had been found which was in better form than the central tooth which was in its proper place. It was in a boy 9 years of age.

The SECRETARY announced that he had received from Mr. R. E. Woodcock a specimen of a case of either germinated teeth or fusion of the cement after development. He also announced the receipt from Mr. Thomas Nash, of Inverness, of a model of an epulis taken from a woman 65 years of age.

Dr. GREVERS (of Amsterdam) exhibited a long series of lantern slides illustrating some diseases of the antrum and cysts.

The CHAIRMAN said he was sure it had been very interesting to the members to see the lantern slides which Dr. Grevers had brought before them. The thing that struck them most, probably, was the great industry that Dr. Grevers had shown in getting together such a collection, and the members would all feel grateful to him for having brought the subject before them that evening.

Mr. STORER BENNETT cordially agreed with the chairman with regard to the indefatigable energy that Dr. Grevers had shown in making such a collection of photographs, but thought the Odontological Society's Museum would show Dr. Grevers quite as good specimens of alveolar abscess as any of those he had shown on the screen. Of the series of specimens Dr. Grevers had shown the most interesting were those in which the antrum itself was almost entirely obliterated by the formation of new bone. That was an appearance with which he was not familiar and which has not very often figured in any of the books. Books on diseases of the nose possibly might show some photographs, but he was not acquainted with them. The only other criticism he would pass on Dr. Grevers'

exhibition was to say that Dr. Grevers had shown so many specimens that it was almost impossible to carry them all in their minds. The exhibition had been a most gratifying, instructive, and delightful one.

Dr. GREVERS briefly thanked the members for their indulgence. The specimens he had shown were those prepared for his lectures to the medical students of the University of Amsterdam, but what he would show the students in three lectures he had given the Society in one, and even then he had left a number of slides at home which he would have liked to show.

The CHAIRMAN said it only remained for him to accord the thanks of the Society to Dr. Grevers for the demonstration of the evening and to the other contributors of casual communications. The way in which the members had received Dr. Grevers and his exhibition of slides spoke for itself.

The Meeting was then adjourned to February 7th.

DENTAL STUDENTS' SOCIETY, DENTAL HOSPITAL OF LONDON.

THE Annual General Meeting was held on Monday, January 17th, at 7.30 p.m., the PRESIDENT (Mr. C. F. Rilot), in the chair.

Minutes of the previous meeting were read and approved.

Mr. H. Perkins was then introduced to the President by the Secretary according to Law XIX., and signed the Obligation Book.

Mr. STANLEY COLYER then read the Secretary's Report for the past year :—

GENTLEMEN,—It is my duty, as Secretary to the Council, to present to you this evening the Annual Report.

The Council have much pleasure in recording the excellence of the papers read at the meetings, and the interesting discussions which have followed. They also wish to thank those gentlemen who brought forward casual communications. Two mechanical evenings were held during the society year, one of which was chiefly devoted to the exhibition of new electrical instruments—kindly lent by Messrs. Ash. Both evenings were a great success, and it is the hope of the Council that they will be repeated in the coming year.

New rules have been prepared and printed. The obligation book, long fallen into disuse, has been revived. The Council have been considering the desirability of increasing the number of microscopes ;

and lastly the Council wish to thank Mr. Carden for kindly undertaking the duties of Librarian and Curator, in the absence of Mr. J. C. Douglas, incapacitated through illness.

Mr. W. GREER, then proceeded to read the Treasurer's report for the past year.

Mr. PRESIDENT AND GENTLEMEN,—Our expenses during the past year have exceeded those of the previous one by, approximately, £4. We have had items to meet that had accumulated from the preceding year to the extent of slightly over £7; on the other hand we have to congratulate ourselves on the continued and substantial support accorded us by the staff of our hospital, also by the increase of subscriptions to the amount of £5 7s. 6d., consequent upon an increase in the membership of our Society, which now contains over 97 members.

The Society then proceeded to elect officers for the coming year, as follows:—*President*, Mr. H. Baldwin; *Vice-Presidents*, Stanley Colyer and W. Greer; *Secretaries*, W. B. Woodhouse and W. de C. Prideaux; *Treasurer*, H. Quinton; *Librarian and Curator*, A. E. Carden; *Microscopical Curator*, W. W. Jones; *Second year Councillors*, Messrs. E. F. Ackery, L. Balding, Belsey, Cardwell and W. H. Thomas; *First year Councillors*, Messrs. J. T. Carter, R. H. Heath, Rice, and S. C. Smith; *Scrutators of the Ballot*, Messrs. W. Greer and A. G. Payne.

On Casual Communications being called for—

The SECRETARY, on behalf of Mr. W. de C. Prideaux, exhibited the models of a case of double gemmation of central incisors. The patient was a boy, about 10 years old, and came to the hospital suffering from periostitis in the left geminated tooth, without apparent cause. Aconite and iodine were applied to the gum over the root, and the patient did not return. His upper temporary canines had been extracted about two months previously, and on the right side the permanent canines could be felt high up in the arch beneath the gum.

Mr. W. B. WOODHOUSE then read the notes of an obscure case of severe pain in the head. A girl, aged 19, came to the hospital about a fortnight before Christmas complaining of pain on the left side of the face, with swelling, and slight suffusion of the conjunctiva. Several carious molar and bicuspid stumps were removed from the upper jaw on that side; three or four days elapsed with

no relief, if anything, the pain grew worse ; it was not possible to pass a probe into the antrum through the sockets ; there was a history of old antral trouble, so Mr. Baldwin (under whom the case was) opened the antrum through the canine fossa, but found it healthy, and the effect on the patient's suffering was nil ; the pain extended all over the head, and down the left side of the neck, the left arm, the left leg, as far as the ankle, and was especially acutely felt in the hip joint ; there was occasional numbness and tingling in the left hand, with pain in the muscles of the arm in movement ; the patient also complained of giddiness, and sometimes fell over on to her left side, and in the street the attacks of giddiness simulated drunkenness to the passer by ; she also felt drowsy and heavy, and said that she could not see so well with her left eye as formerly ; there was no sickness, and when examined with the ophthalmoscope the disc of the eye revealed nothing abnormal—temperature 99·6, pulse 105—the lower wisdom on the left side had not erupted, and, though causing no distress, it was deemed advisable to remove the second molar, but with a negative result ; there was no specific history, but nevertheless iodide of potassium was tried for two weeks without making any impression on the patient.

Though somewhat simulating antral trouble, and even cerebral diseases at one time, I am beginning to think that the case is one of hystero-neurosis.

Mr. C. JENKINS brought forward a specimen of gemmation of the left lateral incisor with a supernumerary incisor, which he had removed from a boy aged 16.

The PRESIDENT then called on Mr. S. C. Smith for his paper entitled "The Effects of Various Trades on the Teeth" (see page 49).

In the discussion which followed, Mr. BALDING asked if the arsenic in wall-papers affected the teeth of paperhangers.

Mr. QUINTON asked if Mr. Smith had noticed how very frequently clergymen suffered from carious teeth.

Mr. W. B. WOODHOUSE related several cases in which players on wind instruments had lost their central incisors, apparently from their vocation.

Mr. W. GREER thanked Mr. S. C. Smith for a very interesting paper, and asked him if he had noticed the deleterious effect of tea-tasting on the teeth.

Mr. C. JENKINS mentioned a case brought under his notice of a cornet player in which the central incisors were worn away, also in another instance in which a cornet player had his two front teeth much loosened.

Mr. STANLEY COLYER related a case of very carious teeth in a young confectioner, illustrating the ill effect this trade had on the teeth, owing to the constant tasting of the sweets during their baking.

Mr. S. C. SMITH briefly replied.

A vote of thanks to the retiring President, proposed by Mr. W. B. WOODHOUSE, and seconded by Mr. W. GREER, was then carried *nem. con.*

Mr. C. F. RILOT returned thanks, and put from the chair a vote of thanks to the Officers of the Society, which was unanimously agreed to.

Mr. STANLEY COLYER suitably replied on behalf of the Officers of the Society, and the meeting terminated at 9.10 p.m.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

A SPECIAL GENERAL MEETING was held half-an-hour previous to the Ordinary Meeting on Tuesday, November 23, to discuss the proposed addition to Bye-Law X., of which notice in writing had been given to members.

The President proposed, the Hon. Secretary seconded, and it was carried unanimously, that the following be added to Bye-Law X., viz.:—"That in the case of young men applying for membership within 12 months after the date of their qualification, the Entrance Fee of One Guinea shall be remitted."

THE Ordinary General Meeting was held at 7.30 o'clock at the Dental Hospital, Mount Pleasant.

The PRESIDENT, Dr. Waite, was in the chair, and there was a good attendance of members and visitors.

The following gentlemen were balloted for and admitted members, viz.:—Messrs. Wm. Williams, L.D.S.Edin. (Holyhead); J. E. Edwards, L.D.S.Edin. (Wrexham); G. P. Warlow, L.D.S. Edin., G. B. Wilson, L.D.S.Edin., C. F. Anderson, L.D.S.Eng. (Birkenhead); A. E. Harrison, L.D.S.Eng. (Liscard); J. W. Skae, L.D.S.Eng., S. A. Knaggs, L.D.S.Eng., Bernard Smith, L.D.S.

Eng., Sidney K. Smith, L.D.S.Eng., J. H. Anderson, L.D.S.Eng. (Liverpool).

The following Demonstrations were given in the Conservation Room :—

Mr. J. H. GARTRELL (Penzance) gave a very excellent demonstration, which created a great amount of interest. He had his new Continuous Gum Furnace at work, and most successfully baked a complete upper ; he also had some specimens of the work that could be done in this gas furnace, and every one present admired the colour and texture of them. Mr. Gartrell also showed his new improved Shot-Swager, and proved that by using it in connection with fusible metal models (poured direct into the plaster impression) a great amount of time and labour might be saved in doing plate work.

Mr. J. S. DICKIN (Southport) demonstrated the advantage of cataphoresis in the treatment of sensitive dentine. Several very sensitive incisor interstitial cavities were excavated quite painlessly after an application lasting about 10 minutes.

Mr. E. A. COUNCELL (Liverpool) demonstrated the very beautiful Electric Furnace of Messrs. Downie.

Mr. W. HARGRAVE (Southport) demonstrated a Richmond Crown on a left upper lateral.

Messrs. C. ASH and SONS had on view a number of their latest productions.

At 9.15 there was a short interval, during which tea and coffee were served in the Students' Room, and afterwards there was a discussion meeting in the Board Room.

Mr. DICKIN (Vice-President) was in the chair, Dr. Waite having to leave at an earlier stage of the proceedings.

Mr. GARTRELL spoke to the value of the Shot-Swager, and said that now in his own laboratory he had quite discarded zinc and the casting bench and used only fusible metal models. This metal is the result of a good deal of experimenting to overcome the tendency that ordinary fusible metal has to make a porous surface ; it is a mixture of lead, bismuth, cadmium and arsenic.

There was a good deal of discussion as to whether continuous gum was as satisfactory a colour now in the quick-firing furnaces and with the lower fusing body as in the old days. Great praise was bestowed on Dr. Allen's work.

Mr. GARTRELL pointed out—in answer to a question from a member—that the more rapid the firing the less liability there is for the enamel to “check.”

Mr. DICKIN, in reply to some questions regarding his demonstrations, laid stress on the importance of having the electrode that goes into the cavity as large as the cavity will receive, and so spread the electric current over as large a surface of dentine as possible.

After very hearty votes of thanks to the gentlemen who had been good enough to provide the demonstrations, a very pleasant evening terminated.

THE Third Ordinary Meeting for this Session was held in the Medical Institution, Mount Pleasant, on Tuesday evening, January 18th, at 7.30 o'clock.

Dr. WAITE (President), was in the chair, and there was a fair attendance of members.

The HON. SECRETARY read the Minutes of last meeting, which were confirmed.

Mr. DICKIN showed an artificial tooth that he had coloured with the Dental Manufacturing Company's preparation, which he explained as consisting of a suitably coloured powder and liquid, which, having been mixed together and painted on to the part of the tooth desired was then fused in any one of the ordinary continuous gum furnaces. The result seemed very satisfactory. He also exhibited a crown and band, both removed from patient's mouths, and very well exemplifying how *not* to do them.

Mr. WOODS showed the models and bite of a very well marked case of inferior protrusion in a patient aged about 20. In the case of this man, the upper arch was very well developed and quite as large as the average, but notwithstanding this the lower incisors, when the mouth was closed stood over half-an-inch in front of the uppers. All the bite seemed to come on the last molars, and as a consequence there was a certain amount of open bite in addition to the other deformity.

The PRESIDENT then called upon Mr. W. H. Gilmour for his paper entitled “Debatable Points in Anæsthetics.” (See page 55).

DISCUSSION.

Mr. ROSE said he had now adopted the practice of having a medical man present for his nitrous oxide administration, and finds it much more satisfactory.

Mr. MANSELL said that local anæsthetics in dental surgery are very little *real* use, but that in very nervous subjects they are held to give confidence. He has not found that the addition of oxygen to nitrous oxide was of any great advantage, and preferred to give a little air. In case of large operations under anæsthetics he very much prefers to do them at the patient's own house.

Mr. PIDGEON has now almost given up the use of cocaine, but finds chloride of ethyl useful in some cases.

Mr. ROBERTS thought that one could not lay down an absolute rule as to the most suitable anæsthetic in all dental cases, but that they had to be varied to meet all conditions, and strongly advocated employing *only* an experienced anæsthetist.

Mr. L. OSBORN quite agreed with Mr. Gilmour that Clover's Inhaler was much the best apparatus to use for the administration of nitrous oxide and ether. He had been present at three fatal cases during the administration of chloroform, and in all of them death had been almost instantaneous and in the very first stage.

Mr. CAPON has found chloride of ethyl useful in the extraction of incisors, but has often noticed a more or less general anæsthetic effect as well as a local one, no matter how carefully one tried to prevent it.

Mr. KNAGGS advocated giving a small continuous supply of air with the nitrous oxide in case of children.

Mr. WOODS discussed the question of administering gas several times or doing the required extractions at one time under the influence of one of the other anæsthetic agents. He quite agreed that it was preferable to have an experienced anæsthetist, but in many cases one had to have the family medical man.

The PRESIDENT pointed out the great improvement there was now in the knowledge of anæsthetics compared to 30 years ago; then the average general practitioner knew nothing about their administration. He regretted that cocaine was so little use in dental surgery as it has proved so invaluable in ophthalmic and nasal practice.

Mr. GILMOUR having replied, a very hearty vote of thanks to him concluded the meeting.

THE DENTAL RECORD LONDON: FEB. 1, 1898.

A DENTAL REPRESENTATIVE ON THE MEDICAL COUNCIL.

THE presence of a representative on the Medical Council is certainly the most pressing need of the dental profession. This is more readily appreciated when we remember that the Medical Council guards and controls the portals, through which a man enters the domain of the legal practice of dentistry. Acts of Parliament, decisions of Courts of Law however favourable to us as a profession, may be annulled or counter-balanced by the doings of the Medical Council. It is true it is not the ultimate court of appeal; it is true any glaring irregularity could probably, or, at least possibly, be rectified by appeal to the Privy Council; but this is a long, uncertain process, and in minor matters an impossible course. Considering then the importance of the Medical Council, it is of the first importance that the dental profession, or, at least its chosen leaders, should be cognisant, not only of the public doings of the Council, but of the private deliberations of its committees. There is no wish, nor has there been any attempt to impute to members of the Council motives inconsistent with their honour as the legally appointed guardians of the Dentists' Act; nor, though we may disagree with the expressed opinions of some of the members of the Council, need we assume that, as a whole, it has any antagonism to the spirit of the Dentists' Act, nor any other wish than to carry out its directions fully and impartially. But even if we grant all this, as, indeed, we readily do, it is obvious, especially from its recent doings, "that some one has blundered." But for an accident and for the prompt action of one member, 'o whom we must be ever grateful, the fabric built up so slowly and at such cost would have been destroyed, or so shaken, that years would have been needed

for its restoration. It is no secret that, on the advice of the Executive Committee, the Council were at the last Session about to admit to the Register a number of men, who, to put it mildly, had made no attempt to fulfil the curriculum laid down by the Council itself. It is difficult to understand on what grounds the Committee had formulated this recommendation, nor is it necessary to discuss it to illustrate our point. Suffice it to say that the whole matter was a secret, and but for a chance hint the Dentists' Register would have again been thrown open to all and sundry. For if these applicants had been admitted, how could others have been refused; and how, in common fairness, could a high standard of training and culture have been demanded from any seeking the title of dentist? It might be said that this attempt having failed—the Council being now informed on these matters—there is less need now than before for a dental representative. We disagree entirely. No one, six months ago, would have dreamed of the possibility of this occurrence, and this is but one point of many in which the actions of the Medical Council concern us most nearly. Granting without any reservation whatsoever that this contemplated mistake, and the Council have by their action almost admitted the mistake, was the result of lack of knowledge, does it not prove beyond doubt that on the ground of expediency the Council needs a member qualified to advise, in other words a representative of the dental profession?

But dentists claim a seat on the Council as theirs by reason of justice. It is against the whole fabric of English right and justice that those ruled should not be represented. It is unjust that those contributing more than their quota to the maintenance of an institution should yet have no voice in the control of its affairs. It is impolitic that an Act governing the professional life of a body of men, now numbering some thousands, should be practically administered by a committee, which deliberates in secret and on which it is not represented.

We, therefore, have a very strong case for the appointment of a dental representative on the Medical Council, the justice of which has been recognised by members of the Council, and by many of the electorate of the Council. Now, members of the Council become so by Crown appointment; as representatives of various corporations; and are directly elected by those on the Medical Register. It is obvious that a specialist can scarcely claim to be an ideal representative of one of the great corporate bodies, though, indeed, one such body elects to be so represented; nor can we in common fairness expect the medical profession to elect one of our members to represent them as well as ourselves. Their direct representation is already meagre in the extreme. On a Council composed of thirty members, five only are elected by the body of the medical profession, while twenty being elected by corporations represent the consulting, so called, physicians and surgeons. Hence, unless the number of direct representatives be increased, we cannot hope, nor indeed wish, to obtain one of these seats; though it is certain that those who possess a vote in virtue of a medical qualification may, and legitimately should, arrange with others to plump for the candidate nearest in touch with our professional life. There remains, therefore, as the one chance of representation at the present time, the hope that the Crown may see fit to recognise the justice of our claim, and, when a vacancy should occur, to appoint a member of our profession. We have been told that in these days "votes are the prime political force." Let each member exert himself, with tact and discretion, to impress those having influence with the expediency of this appointment. This manner of obtaining a representative may not be our highest ideal, we may hope some day that those on the Dental Register will possess the right to directly elect a representative; but that is in the future, a future which may be brought nearer by the appointment of a dentist as Crown nominee.

News and Notes.

Mr. W. W. GABELL, L.D.S.Eng., has been appointed Honorary Dental Surgeon to the Victoria Cottage Hospital, Barnet.

Mr. HAROLD J. PICKERING, L.D.S.Eng., has been appointed Assistant Dental Surgeon to York Dispensary.

THE Dental Hospital of London has received a donation of £109 7s. 6d. from the Prince of Wales's Hospital Fund. It is said, we know not with what truth, that though special hospitals are receiving a donation from the fund this year they will not receive an annual subscription.

THOUGH the obituary notices in the public press render unnecessary any lengthy reference to the life and work of Mr. Ernest Hart, still we may express our sense of the greatness of the loss which we have all sustained by the death of the editor of the *British Medical Journal*.

AT Brompton County Court, on January 11th, before Deputy-Judge Fitzroy Cowper, the South Kensington Ladies' Dental Association and Institution (Registered), of Sussex House, Glendower Place, South Kensington, claimed for teeth supplied and work done for the defendant, Miss Pegden, of South Kensington. Defendant was represented by a solicitor, who contended that under the Act of Parliament the plaintiffs could not recover, as the law laid down that only registered dentists could recover sums due for work done. The plaintiff association was not registered, although advertising as such. Moreover, it could not be registered, as the first essential was the passing of an examination, which was an impossibility so far as an "Association" was concerned. Mr. William Ash, M.R.C.S., L.R.C.P., said he was the manager of the Association, and was a registered dentist. The Judge: Yes, but you are not the Association. Mr. Ash: You decided a case some

time ago in our favour. The Judge : Did I? Perhaps the objection was not taken then. I cannot amend the summons. If I put in your name as plaintiff, trading as the Association, I do not think that would be correct. What does the Association consist of? Mr. Ash : It consists of Mrs. Partridge and her children, and I am their trustee and carry on their business for them. The Judge : The fact of your being registered does not help the Association. The Solicitor : This lady is not a registered dentist. The Judge : And an Association cannot be registered and you cannot sue for work done by an Association. The whole thing is misconceived. I must dismiss the summons, with costs.

OUR esteemed contemporary, *The Dental Practitioner and Advertiser*, is wrong in stating that the English L.D.S. could be obtained *sine curriculo*. Though some other of our colleges have so granted diplomas.

A RECENT decision given by Judge Addison at the Greenwich County Court has aroused a good deal of discussion. Briefly, a medical man sued a patient for the recovery of a fee, stating it had been arranged he should attend her confinement, but at the last moment another medical man was called in. It is not necessary for us to recapitulate the details of the case and of the arguments, but the plaintiff lost his case, the Judge basing his decision largely, though not entirely, on the assumption that the doctor could not charge for work he never did. In other words, no matter how long a time be reserved, no matter what other appointments be postponed or refused, if the patient chooses at the last moment to call in some one else then such time is wasted and a fee cannot be claimed. If this is law, it is not justice. Surely a written request to reserve time is as much a contract as any order given to supply labour or goods, and should be paid for.

THE Annual Meeting of the Governors, Subscribers and Friends of the Birmingham Dental Hospital was held on January 25th, at the Council House. The Lord Mayor (Councillor Beale) occupied

the chair, and there were also present Mrs. Beale, Lieutenant-General Phelps, Dr. J. H. Blakeney, and Messrs. H. B. Neale, F. H. Huxley, A. Turner, W. Barrow, W. Thomas, A. E. Donnegan, F. H. Goffe, W. T. Nadin, J. Stones (Registrar), and W. A. Addinsell (Hon. Secretary). The Committee's Thirty-eighth Annual Report, which was taken as read, states that the financial statement shows a balance of £234 4s. 3d., of which £200 will be reserved for building at the end of the present lease. The Committee highly appreciate the skill and attention devoted to the work of the hospital by the members of the staff, and have received with regret the resignation of Mr. J. Humphreys, one of the honorary dental surgeons for years. In conclusion, the Committee wish to point out how essential it is that they should receive more liberal support. The report of the Surgical Committee states that there has been a considerable increase in the amount of work done at the hospital. The number of operations under ether have remained the same as in the previous year, viz., 31, but the number of operations under nitrous oxide have increased close by upon 700, whilst the number of teeth extracted with an anæsthetic shows a decrease on last year. In the conservative treatment of teeth, the amount of work done again shows a very satisfactory increase, but in order to cope with this class of work it is desirable that the surgical staff shall be provided in the near future with premises of a much more extensive and convenient nature than at present exists. It has been arranged that a workroom shall be fitted up in the hospital where the students may have practical instruction in the process of making artificial dentures, in order to comply with the new regulations of the College of Surgeons. There are 18 students attending the practice at the hospital, 10 have obtained their diplomas in dental surgery at the Royal Colleges of Surgeons, and 11 new students have entered the hospital during the year. The total number of operations during the year was 23,949, as against 22,595 last year. The statement of accounts shows that £153 5s. was received in subscriptions, as against £128 4s. in 1896, and that the registration fees amounted to £498 2s. 10d., as against £444 10s. 7d. The Lord Mayor, in moving the adoption of the reports and statement of accounts, said the hospital was one of those small charities that worked in comparative obscurity, and when one remembered what dental surgery was 38 years ago and what it was now, one could realise the

enormous amount the institution had done towards the relief of those who suffered from diseases of the teeth. The accounts must be regarded as very satisfactory. The total turn-over of the institution had gone up very considerably, the amount being £1,027, as against £934 in the previous year. Mr. Neale seconded the resolution, and said they did a great deal of work in the hospital as it stood, but the institution was entirely behind the times, and what Birmingham should do was to provide them with a new hospital, equipped with all the latest appliances, and with a well-lighted filling room. The staff had for some years now very generously devoted a portion of the funds derived from students, for the purpose of a fund for the equipment of the new building when obtained. The resolution was carried unanimously. Lieutenant-general Phelps next moved a vote of thanks to the honorary staff and officers. In doing so he strongly emphasised the necessity for the provision of a suitable building, which, he said, would cost at least £3,000. Mr. Turner seconded the resolution, which was carried. Mr. Huxley next proposed the election of the Lord Mayor as president, the Right Hon. Lord Calthorpe as vice-president, and Mr. W. A. Addinsell as hon. secretary. Mr. Turner seconded the resolution, which was approved. The election of the hon. surgeons, the auditor, and the committee then took place; and after a vote of thanks had been accorded to the Lord Mayor for presiding, on the proposition of Mr. Thomas, seconded by Mr. Nadin, the proceedings terminated.

A CONTEMPORARY publication has an article headed "The Dentist" in a recent issue. From this we learn the dentist should possess the following attributes:—Decision and self-reliance; Combativeness and destructiveness sufficient to give efficiency; A lion's heart and a woman's hand; Firmness and self-esteem, ideality, constructiveness, prudence, caution, secretiveness and good common sense. Have large hope and mirthfulness and an excellent talking talent; Large constructiveness; Strong social feeling; Continuity of purpose and an unflagging zeal. Really, if all these things are essential, there should be a stringent examination into these virtues before allowing a boy to enter on the prescribed course of study. Or do they grow, like Nancy, of their own sweet selves?

CONCERNING the death of General Grant, Dr. Frank Abbott, of New York, whose patient he was, states that he had a slight irritation at the base of the tongue, caused by a broken molar tooth, to which he paid no attention. He continued to smoke; the tooth continued to irritate the parts, lacerating the surface, and by and by the tissue began to develop new cancer cells, and almost simultaneously with the development of new cells was a breaking down and a development of a characteristic epithelial growth. The diseased process began to extend down the pharynx, involved the lymphatic glands, and when it reached a point that made it almost impossible for him to tolerate the pain he applied for relief, but it was too late.

G. VIAN, writing in *l'Odontalgie*, says:—It is a well known fact that Louis XIV. was born with two teeth and at the end of his life wore an artificial denture made by Dubois, who at that time was an expert in prosthetic dentistry. In a recent work by Dr. Cabanes, entitled “Le Cabinet Secret de l'Histoire,” we find many details of Louis XIV.'s dental troubles. D'Aguin, medical and historiographer of the health of Louis XIV., says that his royal patient had very bad teeth, and began to suffer when about 38 years of age. During the campaign in Flanders the king suffered much, but was relieved by applications of essence of cloves, or of thyme. Two years later, in September, 1678, the king, while hunting, caught a chill, which resulted in an abscess; poultices of bread and milk were applied, and the abscess was opened with a lancet, giving immediate relief. In 1685 he married Madame de Maintenon, and also suffered from necrosis of the maxilla, involving perforation of the antrum. All the teeth of the left maxilla were extracted, leaving a large cavity, due to much bone being likewise removed. The result was that everything the king took passed through his nose. Suppuration also followed, causing an unpleasant odour. On advice of Dr. d'Aguin and Felix Tassy, first surgeon of the king, and Dentist Dubois, it was resolved to cauterize by fire. The royal patient consented to the treatment on January 10th; and the cautery was applied fourteen times. Dentist Dubois, who held the instrument, fainted, seeming to suffer more than the king. The doctors prescribed the following gargle three times a day:—Rectified spirits one part,

distilled water eight parts, orange water eight parts, so as to remove the eschar and to allow granulation tissue to form. Later, the opening closed, and pus came from the nose. The malady kept at this stage for some time. It is possible that this buccal affection and the peculiar state of spirits of Louis XIV. led him to sign the fatal Revocation of the Edict of Nantes (1683). Besides, at that moment, the royal household was far from being happy. One day the king said to Madame de Maintenon, "I am tired of bearing your bad humour." "Sire," she replied promptly, "Do I not bear your bad odour?" Eleven years later (1696), another abscess formed, with swelling of the cheek and of the maxillary glands. After many days and nights of pain the abscess broke, giving some relief. Unfortunately, the king, on the following Friday in going to church, caught cold, swelling of the cheek reappeared, lasting to the next Monday. The patient was relieved after having drawn three pans of blood.

THE Annual Meeting of the supporters of the Liverpool Dental Hospital was held on January 27th at the Town Hall, the Lord Mayor (Right Hon. John Houlding) presiding. The Thirty-seventh Annual Report stated that the total number of patients admitted since the formation of the hospital amounted to 406,060. During the past year the number of patients treated at the hospital had been 24,258, and of operations 34,207, which was an increase in patients as compared with the previous year. There had been an increase of 1,829 in the number of operations relating to conservative dentistry, but a decrease in the number of extractions of 3,344. The patients' voluntary contributions amounted during the year to £157 11s. 8d. The Committee thanked those friends of the hospital, and particularly the dental staff, whose energy and liberality had enabled them during the past year to pay off the balance owing on account of alterations and extensions, but there still remained a mortgage on the premises amounting to £450, towards which the residue of the Woolfall legacy, £38 9s., had been appropriated, and there was a balance of £29 13s. 2d. due to the Honorary Treasurer on working account. The Committee recorded with thanks donations to the hospital amounting to £53 0s. 6d. The thanks of the Committee were due to the committee of the Hospital Sunday Fund for their contribution of £57, and to the medical, surgical, and

dental staff for their valuable services during the past year. The Lord Mayor moved the adoption of the Report and the Statement of Accounts. Sir James Poole, in seconding, remarked that in his opinion no charitable institution of the city could place before their subscribers so admirable a statement. When they considered that the hospital was worked on something like £500 a year the record of patients and operations was praiseworthy indeed. It was a matter for congratulation that their hospital was admitted by authorities from all parts of the country to be second to none in the kingdom.

Dr. Quinby, in supporting the motion, said that the hospital combined a thoroughly scientific system of education for students, with necessary operations for the relief of suffering. The motion was carried unanimously. On the proposition of Mr. G. H. Ball, seconded by Mr. J. Lister, thanks were accorded to the President and Officers for their work during the past year. Mr. C. Birchall moved a vote of thanks to the Consulting Physician, Consulting Surgeon, and Dental Staff for their professional services during the year. The motion, which was seconded by Mr. T. M'Cracken, was adopted. The Lord Mayor was heartily thanked, on the motion of Dr. Quinby, seconded by the Rev. R. Cuff, for presiding, and his Lordship's acknowledgments concluded the proceedings.

Abstracts and Selections.

TREATING RUBBER DAM.

To get rid of the disagreeable odour and unpleasant feeling that usually accompanies rubber dam, wash it before using, and after thoroughly drying it, sprinkle over the surface on both sides a small quantity of Mennen's Borated Talcum. Rub it a few times between the hands and you will find a nice, smooth surface on either side of the rubber with a very mild, agreeable odour.—*Dental Weekly*.

ARTIFICIAL CORUNDUM.

LOYER (*Chem. Zeit.*) states that if sodium aluminate be heated to a red glow in the presence of chlorine, a crystalline mass is obtained in which corundum appears as hexagonal tablets, along with sodium chloride. The reaction is attended with evolution of oxygen. Washing out the sodium chloride frees the crystals. If now we add

to the sodium aluminate small quantities of chrome alum in varying proportions, and submit the mixture to the same treatment (heating in the presence of chlorine), we can produce at will the coloured varieties of corundum ; the ruby and sapphire.—*Review*.

POLISHES FOR METAL.

J. H. K., Illinois : In a note printed in the *Circular* for February, page 47, the principal polishing agents are named, with mention of how pastes may be formed from them. A formula is there given for a polishing tablet, and one also for a liquid polishing preparation. From a previous volume we take the following as types of polishing pastes :

I.						Parts.
Rotten stone	...	...	...	...	...	1
Iron subcarbonate...	...	...	...	...	...	3
Lard oil a sufficient quantity.						
II.						Parts.
Iron oxide...	...	...	...	...	...	10
Pumice stone	...	...	...	...	...	32
Oleic acid a sufficient quantity.— <i>Review</i> .						

STOMATITIS EPIDEMICA.

STOERK (*Wiener Klin. Wochenschr.*, 1897, x, 77). The appearance in the human being of epidemic stomatitis contemporary with epidemics of mouth-and-foot disease in animals has frequently been observed. Stoerk's attention has been drawn to this by the communication made to him by Dr. Fruhwald, who has recently met with numerous cases of stomatitis in his practice, particularly in children brought up on cow's milk. They would not yield to the application of stringent mouth-washes until they were deprived of their milk. The frequency and severity of the process, together with the contemporary mouth-and-foot disease in the animals, led Stoerk to suspect a direct infection.

The first case treated by him for a violent stomatitis was a boy ten years of age, the son of a butcher. The patient was brought with the announcement that he was unable to eat on account of such a great swelling in the mouth that all attempts at eating produced the greatest distress. As a matter of fact the mucous membrane of the

gums was found greatly infiltrated and swollen, so that a depression was present between each tooth and its gum ; both the upper and lower jaw were similarly affected. His first thought was that the case was one of mercurial poisoning, and closely questioned the father on that line, but was unable to elicit any fact which could enlighten him. The case was treated as one of mercurial stomatitis, with tincture of opium, rathania and nitrate of silver. No improvement, however, could be seen after fourteen days. In marked contrast to this case were those which Stoerk has recognised as an infection due to mouth-and-food disease. In these cases the treatment has been much more successful, because of the fact that it had been pursued with an antibacterial remedy. The good results obtained from antibacterial treatment seemed to substantiate the view expressed by Dr. Siegel, of Britz, that we have to deal with a bacterial disease in these cases of epidemic stomatitis.—*Pediatrics*.

THE TREATMENT OF TRIGEMINAL NEURALGIA.

By WILLIAM ALDREN TURNER, M.D., F.R.C.P.

FOR the alleviation of this painful, and often protracted, malady, the therapeutic resources of the physician are taxed to the utmost. For, in addition to the temporary relief of pain demanded by the patient, an attempt should be made to reach and cure the causal condition.

Hence the methods of treatment divide themselves into :

1. Remedies given with a view to cure.
2. Remedies administered locally and internally to relieve pain.
3. The local application of electricity.
4. Surgical procedures—neurotomy, neurectomy, nerve stretching, and removal of the Gasserian ganglion.

1. The etiology of each case should be separately considered, and for this purpose an examination of all the organs receiving nerve filaments from the fifth cranial pair should be made—the eyes, more especially with a view to the detection of errors of refraction ; the nose, attention being directed to the condition of the turbinated bones and the antrum of Highmore ; the teeth, for carious conditions, more especially those implicating the deeper layers of the dentine ; the ears and the throat.

Should any abnormal condition exist in these structures, their correction, surgically or otherwise, is the first consideration.

A large number of cases exists in which no diseased state can be detected in these organs. In many cases of trigeminal neuralgia of a non-malarial nature, quinine, in doses of from 5 to 10 grains, given periodically, may produce a curative result.

The administration of iodide of potassium in 10-15 grain doses every four or six hours is often of marked service in cases which have no syphilitic history, but in which the pain is probably due to thickening of the perineurium, where the nerve issues from a bony canal or fibrous ring.

Should a distinctly rheumatic history be obtained, the combination of iodide of potassium with salicylate of soda (10 to 15 grains) is most effectual. All cases, but more especially the malarial and anæmic, may be improved, and eventually cured, by the administration of arsenic, either as Fowler's solution, or as the double iodide of mercury and arsenic as in Donovan's solution.

2: Of internal remedies for the relief of pain, mention will first be made of the so-called "neuralgia specifics." Of these the chief are the following:

Probably the most serviceable is tincture of aconite, given in doses of one minim hourly, and the effect watched.

Tincture of gelsemium sempervirens, which may be given in doses of ten minims every hour up to four hours.

Butyl chloral hydrate, 5-10 grains every hour until 30 grains have been taken.

Tonga, drachm doses of the infusion.

Actæa racemosa, in $\frac{1}{2}$ -2 drachm doses of the fluid extract, or 30 minim doses of the tincture, though not a "specific," as the previous remedies, has been found equally useful.

Bromida in 1 drachm doses is also highly recommended by some.

Cannabis indica, given in doses of $\frac{1}{6}$ - $\frac{1}{4}$ grain of the extract, has been found by some to be of value.

A host of synthetic remedies are now in the market for the relief of pain, many of which are valuable, some useless, and a few dangerous. Of those which may be safely recommended are:

Antipyrin, in doses of 5 grains, every hour for three or four hours.

Phenacetin, which may be administered in the same way as antipyrin.

Exalgin migrainine (a patent remedy), and less valuable anti-febrin, in 2 to 3 grain doses.

As these remedies are, in addition to being analgesics, temperature depressors and blood destroyers, their continued administration should be watched with care.

A form of local medication, which has fallen lately into disuse, is often of marked service in relieving acute pain of a neuralgic nature. Such is the hypodermic injection, over the seat of pain, of substances having a local anæsthetic action.

Such, for instance, is the hypodermic injection of osmic acid, in doses of 1 or 2 drops of the 1 per cent. solution ; also of carbolic acid as a 2 per cent. solution ; 5-15 drops of chloroform ; and of caffein in injections of approximately 1 grain.

The local application of ointments may also be efficacious. Such are the ointments of aconite, veratrum and menthol, or the liniments of aconite, belladonna and chloroform.

But before resort is had to these applications, simple measures, such as hot or cold fomentations, mustard leaves (often most efficacious), or cantharides blisters should be tried.

One of the most distressing features of a severe case of trigeminal neuralgia lies in the difficulty of cleansing the teeth and mouth cavity, as well as the inability to masticate. These are due to the fact that movement of the jaw usually starts a severe paroxysm of pain.

A certain amount of relief may be obtained by painting the inside of the mouth and gums with a 5 per cent. solution of cocaine, which causes a sufficient degree of anæsthesia to permit of the mouth being washed and food to be taken.

There are many cases, however, which will not be materially affected by any of these remedies. In these the pain is usually severe and always paroxysmal—the so-called epileptiform neuralgia of Trousseau. In such cases the only remedy is to be found in the hypodermic injection of morphia. There seems to be no doubt that the prolonged administration of opium will bring about a cure in some cases ; but the surgical procedures, to which resort is now more commonly had, should be recommended in preference. In administering morphia for this or any other condition, it is advisable to combine with atropine, the following being a serviceable hypodermic injection :—

Morph. Hydrochlor., gr. $\frac{1}{8}$

Atrop. Sulph., Gr. $\frac{1}{75}$

In all cases, whatever their nature, too great attention cannot be paid to the general health. Iron, cod-liver oil and alcohol, judiciously administered, are often productive of marked improvement.

A useful, and, in many cases, a satisfactory method for the relief of trigeminal neuralgia is to be found in the local application of electricity. Of the two forms of electrical current galvanism is that more commonly and more effectively used. Its method of application is simple. The negative electrode is placed over an indifferent part, while the positive is carried along the course of the pain, or put over the tender points of the nerve. Not too strong a current should be used: one sufficient to produce a feeling of tingling being all that is required. It will be found preferable to recommend this method for application by the patient himself. The application of the galvanism by a skilled person three or four times a day over a definite period is of little value. Much more satisfactory is the application of the positive pole to the area of pain as soon as a paroxysm commences. The sitting may be prolonged for four or five minutes, and frequently repeated.

This method is useful not only because of the anodyne action of the galvanic current applied as above described, but probably also as a mild counter-irritant, as shown by the redness of the skin over the seat of application.—*Treatment.*

SEEKERS AFTER FRAUDULENT DEGREES.

THE attention of some of the English critics of American Dental Colleges is called to the following correspondence. The Dental Department of the University of Buffalo is not infrequently in receipt of such communications as that from this Mr. Cottrill. It is probable that other schools receive the same. It is something peculiar that the Buffalo College has received nothing of the kind from any other country than Great Britain or its colonies. They have come from Australia and South Africa, but none from German or French possessions. Can it be because, from English sources, the impression has been given out that American degrees can be obtained *sine curriculo* as could the English L.D.S. but a short time since? That time has passed in England, we believe, and it never existed in America. It is true that men have advertised fraudulent

American degrees from colleges that had no existence, but they were not offered for sale in this country, their purchasers being chiefly found in England. This Mr. Cottrill is as guilty as an American college would be if it sold him a diploma. The consideration of the matter is respectfully commended to the *London Pharmaceutical Journal*, which, in a recent number, speaks of American degrees "that are sent by return of post on receipt of fees."

There is no denying the fact that the standard of some of our colleges is far too low. That is a misfortune inseparable from a comparatively new country, divided into many separate States, each autonomous so far as its domestic and educational interests are concerned, all very rapidly filling with a population rather illiterate, but exceedingly appreciative of and highly desirous of securing for their children educational advantages. Money has been easily acquired, and the consequence has been the endowment of a great many obscure colleges, for the propagation of all kinds of eccentric or sectarian ideas, and the opening of others under the patronage of the separate States. The Legislatures have been too often composed of men who have risen to place by means of their natural ability rather than their educational equipments, and they were not the wisest persons to trust with the duty of framing college charters. Under these conditions, more schools with high sounding titles have been founded than can ultimately survive. Some have been illegitimately incorporated under lax laws intended for other purposes. Swindlers have taken advantage of these circumstances to advertise fraudulent degrees in Europe which are never offered here, because that would ensure discovery and punishment. This explains why reputable institutions are subject to such insults as the following :—

8, College Precincts, Worcester, England.

The Dean of the Dental Hospital, Buffalo, United States of America.

SIR,—Will you kindly forward me particulars of your D.D.S. examination as early as possible. It is my desire to obtain the same but have little time at my disposal, so I should like to know the most rapid method of obtaining it. Could it be got by examination thro' the post? I have got several years ago a Coll. of Preceptors, Eng. certificate of general knowledge.

Yours respectfully,

W. SANDFORD COTTRILL.

[ANSWER.]

W. SANFORD COTTRILL.

SIR,—You can obtain the diploma of the Dental Department of the University of Buffalo by—

1. Showing a duly sealed and certified certificate that you have the equivalent of a full High School graduation in this country, or that of a German Gymnasium.

2. Are of good moral character and reputation.

3. Have spent three full years in the study of dentistry in this institution.

4. Have passed all the required examinations.

5. Have paid the necessary fees and maintained a satisfactory deportment while in attendance.

On no other terms can you obtain our diploma. Your letter leads to the suspicion that you cannot comply with the second requirement, for you evidently desire to obtain our diploma without having earned it. If that is the case, you may rest assured that we fully appreciate the insult offered us, and resent it accordingly.

UNIVERSITY OF BUFFALO DENTAL DEPARTMENT.

—*The Dental Practitioner and Advertiser.*

A STUDY OF THE DEFORMITIES OF THE JAWS AMONG THE DEGENERATE CLASSES OF EUROPE.

By EUGENE S. TALBOT, M.D., D.D.S.

THE Twelfth International Medical Congress in Moscow, Russia, afforded me a long-sought-for opportunity not merely to visit Russia, but also to cover nearly all the countries of Europe.

In visiting the various cities I made special observations of the degenerates in each of the various institutions for the defective classes. The objective points of interest were the prisons, insane hospitals, schools of idiocy, foundlings' homes, etc. The features of the soldiers, police, and cabmen, as well as the citizens themselves, were incidentally noted for the purpose of comparison. These observations, however, were for an entirely different purpose, the object of this paper being to record results as to the deformities of the jaws and teeth of the mature degenerate classes.

In a prison in Athens containing 452 convicts not a single V-shaped or saddle arch was found, although slight irregularities of the teeth due to local causes were observed. Arrest of the lower jaw, however, was the rule, which, together with the recession of the forehead, gave to the individual an idiotic appearance. Irregularity, in the relation of the upper to the lower jaw, due to excessive and arrest of development was very common. The third molars, upper and lower, were present, but the vault was lower than the average.

In a Greek insane hospital (idiots are here confined with the insane) in Constantinople, of 332 inmates (equally divided as to sex), only one case of V-shaped arch was noted; the vaults low; upper jaws large and full; but 48 per cent. of the lower jaws were arrested; third molars normally developed.

In an Armenian insane hospital (idiots are here confined with the insane) in Constantinople, of 250 inmates (175 males, 75 females) there was one partial V-shaped arch; the third molars normal, and the lower jaw arrested in 18 per cent. There were many mongoloid faces.

In the Vienna Insane Hospital, of 326 insane and idiots, there were four partial V-shaped and one saddle-shaped. The third molars were normally developed in 311 cases.

In a prison in Moscow, with 2,000 convicts (247 of which were in the hospital), there were no contracted jaws or irregularities of the teeth. The jaws were very large and vaults low. In the Moscow Reform School there were 112 boys, ranging from 10 to 18 years. Three had partial V-shaped arches. No saddle-shaped arches. The jaws, as a rule, were large and broad, with low vaults.

In a Moscow insane hospital, with 400 patients, of which 12 were idiots, no contracted arches were observed. The jaws were large and broad, with low vaults.

In the Stockholm Insane Hospital, with 270 patients, there were six V-shaped arches, 12 partial V-shaped, four semi-V-shaped, 23 saddle-shaped, four partial saddle-shaped, 11 excessively developed upper jaws, three excessively developed lower jaws, nine hypertrophy of the alveolar process, 42 missing third molars, six missing laterals. Deformities of individual teeth numerous. The School of Idiocy, of Stockholm, with 120 inmates (80 boys, 40 girls), gave the following results:

Boys.—Normal jaws 14 ; V-shaped 12 ; Partial V-shaped 10 ; Semi-V-shaped 4 ; Saddle-shaped 8 ; Partial saddle 1 ; Semi-saddle 2 ; Hypertrophy of the alveolar process 32 ; Macrocephalic 12 ; Microcephalic 5.

Girls.—Normal jaws 15 ; V-shaped 1 ; Partial V-shaped 5 ; Semi-V-shaped 5 ; Saddle shaped 8 ; Semi-saddle 1 ; Hypertrophy of the alveolar process 14 ; Macrocephalic 6 ; Microcephalic 4.

One boy, aged 13, who was able to take care of himself, had a head 32 inches in circumference, one of the largest on record. The prison at Hamburg had 1,800 convicts. Large, well-developed jaws were the rule. Asymmetry in development, however, was frequently noticed, as well as other stigmata.

The School of Idiocy at Hamburg had 600 children (396 boys, 204 girls), and gave the following results :—

Boys.—Normal jaws 62 ; V-shaped 12 ; Partial V-shaped 16 ; Semi-V-shaped 8 ; Saddle 4 ; Partial saddle 3 ; Semi-saddle 2 ; Hypertrophy of the alveolar process 46 ; Macrocephalic 3 ; Microcephalic 4.

Girls.—Normal Jaws 28 ; V-shaped 4 ; Partial V-shaped 7 ; Semi-V-shaped 3 ; Saddle 1 ; Partial saddle 1 ; Semi-saddle 3 ; Hypertrophy of the alveolar process 25 ; Macrocephalic 5 ; Microcephalic 2.

One boy of 13 had excessive lower jaw, being one and a half inches beyond normal upper. A most remarkable case.

In the Insane Hospital and School of Idiocy at Amsterdam here were 1,337 insane and 255 idiots. In the insane no contracted arches were found. Vaults low, 67. Hypertrophy of the alveolar process. No third molars missing.

Idiots.—Males 116 ; V-shaped 1 ; Partial V-shaped 3 ; Semi-V-shaped 1 ; Saddle 1 ; Females 139 ; V-shaped 1 ; Partial V-shaped 2 ; Hypertrophy of the alveolar process 19.

The vaults low and jaws well developed.

The School of Idiots, Paris, 667 inmates (500 boys, 167 girls), gave the following results :—

Boys.—V-shaped 1 ; Partial V-shaped 40 ; Semi-V-shaped 2 ; Saddle 2 ; Partial saddle 1 ; Semi-saddle 4 ; Hypertrophy of the alveolar process 7.

Girls.—V-shaped 1 ; Partial V-shaped 6 ; Semi-V-shaped 1 ; Saddle 8 ; Partial saddle 2 ; Semi-saddle 1 ; Hypertrophy of the alveolar process 4.

The vaults were low.

Having permits to visit the following prisons in Paris, Ci-apés, Le Dépôt, Grand Roquette, Mazas, La Santé, St. Pélagie, and St. Lazan, after examining the convicts in the first four, aggregating 2,600, I abandoned the task, since no deformities of the jaws were observed of special value.

In England I examined the following public asylums : 1. Earlswood Idiot Asylum. 2. Darenth School for Children. 3. Darenth School for Adults, Hanwell Hospital for the Insane, and the following private institutions : 4. Mrs. Langdon Down. 5. Dr. Shuttleworth. 6. Dr. Beach.

A day was spent at the Criminal Insane Hospital, Broadmoor. Fully one-half of the inmates were so violent that the task was given up. Enough, however, was observed to warrant my stating that fully 80 to 85 per cent. had marked deformities of the jaws and teeth.

Hanwell Hospital for the Insane, Southall, had 2,080 patients. These people were mostly of the dependent class, who went insane after maturity ; hence the class of deformities which are under discussion were not common. Hypertrophy of the alveolar process and excessive and arrested development of the jaws were, however, frequently noticed. Stigmata of degeneracy of head, face, eyes, ears, body, hands, and feet were the rule.

Earlswood Idiot Asylum, Red Hill, Surrey, contained 670, of which 400 were boys and 270 girls.

Boys.—Normal jaws 31 ; V-shaped 108 ; Partial V-shaped 69 ; Semi-V-shaped 11 ; Saddle 19 ; Partial saddle 27 ; Semi-saddle 13 ; Marked arrest of upper jaw 104 ; Marked protrusion of upper jaw 64 ; Marked protrusion of lower jaw 11 ; Marked arrest of lower jaw 306 ; Lateral incisors arrested 46 ; Lateral incisors lost 28 ; Third molars lost 180 ; Showed malnutrition of teeth 160.

Girls.—Normal jaws 24 ; V-shaped 67 ; Partial V-shaped 86 ; Semi-V-shaped 24 ; Partial saddle 8 ; Semi-saddle 23 ; Cleft palate 1 ; Marked arrest of upper jaw 87 ; Marked protrusion of upper jaw 24 ; Marked protrusion of lower jaw 1 ; Marked arrest of lower jaw 237 ; Lateral incisors arrested 30 ; Lateral incisors lost 16 ; Third molars lost 85 ; Showed malnutrition of teeth 78.

Darenth School for Idiots, Dartford, Kent, had 1,000 inmates (640 boys, 360 girls).

Boys.—Normal jaws 150 ; V-shaped 143 ; Partial V-shaped 140 ; Semi-V-shaped 105 ; Saddle 35 ; Partial saddle 20 ; Semi-saddle 10 ; Marked arrest of upper jaw 450 ; Marked protrusion of upper jaw 150 ; Marked protrusion lower jaw 23 ; Arrest of lower jaw 600 ; Lateral incisors arrested 68 ; Lateral incisors lost 42 ; Third molars lost 388 ; Hypertrophy of upper jaw 150.

Girls.—Normal jaws 90 ; V-shaped 118 ; Partial V-shaped 80 ; Semi-V-shaped 65 ; Partial saddle 8 ; Semi-saddle 20 ; Marked arrest of upper jaw 310 ; Marked protrusion of upper jaw 90 ; Marked protrusion of lower jaw 9 ; Arrest of lower jaw 340 ; Lateral incisors arrested 32 ; Lateral incisors lost 19 ; Third molars lost 111 ; Hypertrophy of upper jaw 90.

Darenth School for Adults (Idiots), Dartford Kent, contained 1,050 inmates (450 males, 600 females).

Males.—Normal jaws 60 ; V-shaped 105 ; Partial V-shaped 93 ; Semi-V-shaped 53 ; Saddle 31 ; Partial saddle 5 ; Marked arrest of upper jaw 295 ; Marked protrusion of upper jaw 162 ; Marked protrusion of lower jaw 8 ; Arrest of lower jaw 409 ; Lateral incisors arrested 48 ; Lateral incisors lost 37 ; Third molars lost 442 ; Hypertrophy of upper jaw 58.

Females.—Normal jaws 40 ; V-shaped 177 ; Partial V-shaped 121 ; Semi-V-shaped 79 ; Partial saddle 8 ; Semi-saddle 10 ; Marked arrest of upper jaw 436 ; Marked protrusion of upper jaw 209 ; Marked protrusion of lower jaw 17 ; Arrest of lower jaw 580 ; Lateral incisors arrested 72 ; Lateral incisors lost 62 ; Third molars lost 597 ; Hypertrophy of upper jaw 36.

Of the children, 576 boys showed malnutrition in utero ; 282 girls showed malnutrition in utero. Of the adults, 396 males showed malnutrition in utero ; 578 females showed malnutrition in utero.

Mrs. Langdon Down's Schools for Idiots, Normansfield, Hampton Wick, contains 147 inmates (97 boys, 50 girls).

Boys.—Normal jaws 12 ; V-shaped 36 ; Partial V-shaped 20 ; Semi-V shaped 15 ; Saddle 9 ; Partial saddle 13 ; Semi-saddle 28 ; Arrest of upper jaw 86 ; Third molar missing 92 ; Lateral incisors missing 16 ; Teeth showing arrest and grooves 46 ; Hypertrophy of the alveolar process 19.

Girls.—Normal jaws 5 ; V-shaped 10 ; Partial V-shaped 9 ;

Semi-V-shaped 12 ; Saddle 7 ; Partial saddle 1 ; Semi-saddle 16 ; Arrest of upper jaw 45 ; Third molar missing 47 ; Lateral incisors missing 8 ; Teeth showing arrest and grooves 21 ; Hypertrophy of the alveolar process 7.

Of the 12 normal dental arches (males) seven were hypertrophied. Of the five normal dental arches (female) three were hypertrophied.

Dr. Shuttleworth, Private Idiot School, Richmond Hill, had 12 boys and girls. There was one normal jaw, but no laterals. There were two V-shaped, five partial V-shaped, one semi-V-shaped, partial saddle, and one semi-saddle-shaped jaw. Four hypertrophy of alveolar process. Nine had notched and pitted teeth, and all high vaults. These patients were too young to decide as to the number of third molars, but five had one or both laterals missing.

Dr. Fletcher Beach, Winchester House, Kingston Road, had 13 patients. There were three V-shaped, eight partial V-shaped, and one semi-V-shaped jaw ; six hypertrophy of the alveolar process ; eight had notched and pitted teeth ; all high vaults. These patients were also too young to decide as to number of third molars. Four had one or both laterals missing.

These reports are tabulated in the order in which they were made. They show a gradual increase of degeneracy from the examinations made in Greece to those in England. It will also be noticed that the deformities of the jaws and teeth are more numerous among the better classes—such as are shown in the private institutions of Mrs. Langdon Down and Drs. Shuttleworth and Beach—than among those of the poorer classes in the public institutions of England.

From examinations previously made in Spain, Italy and Switzerland among the degenerate classes, a very small percentage of deformities of the teeth and jaws was found. As compared with the American-born degenerate classes, the percentages are greater than those of the Latin races, and the Slavs, Germans, Austrians, Danes, and Dutch, but from 25 to 35 per cent. less than the Swedes and English.

These observations have proved to me what I long ago suspected from my studies of the degenerate classes which have come to America, and which fill our public charitable institutions as well as our prisons, that the higher the intellectuality the greater the degeneracy of the jaws and teeth.—*International*.

DENTAL PROVERBS (adapted.)

Ah me! What perils do environ
The man that meddles with cold iron.—HUDIBRAS.
And out of mouth as soon as is in sight.—BROOKS.

Misery acquaints a man with strange instruments.—

SHAKESPEARE'S *Tempest*.

I have no other but a woman's reason ;
I want them so because I want them so.—*Tempest*.

Faith, thou hast some fillings in the head now.—

Merry Wives of Windsor.

Every true man's forceps fits your thief.—*Measure for Measure*.
He hath indeed bettered expectoration—

Much Ado about Nothing.

It is a wise dentist who knows his own work.—

Merchant of Venice.

He is well paid that is well satisfied.—*Ibid*.

All the world's our clinic,

And all the men and women only patients.—*As you Like it*.

There's small choice among rotten teeth.—*Taming of the Shrew*.

She never told her pain,

But let concealment like a worm in the bud

Feed on her damaged cheek.—*Twelfth Night*.

Some are born sick, some achieve

Sickness, and some have sickness thrust upon them.—

Twelfth Night.

Sweet, sweet, sweet poison for the rascal's tooth.—*King John*.

Not that I loved amalgam less, but that I loved gold more.—

Julius Cæsar.

He jests at pain that never felt a toothache.—*Romeo and Juliet*.

If it were out, when 'tis out, then 'twere well

It were out quickly.—*Macbeth*.

Brevity is the soul of extraction.—*Hamlet*.

I have thought some dentist's journeyman had made them,
and not made them well, for they imitated humanity so
abominably.—*Hamlet*.

Some teeth are medicinal.—*Cymbeline*.

—*Dental Practitioner*.

THE DENTAL RECORD.

VOL. XVIII.

MARCH 1ST, 1898.

No. 3.

Original Communications.

PRESIDENTIAL ADDRESS.*

By H. BALDWIN, M.R.C.S., L.D.S.Eng.

GENTLEMEN,—My best thanks are due to you for the distinguished honour you have done me by electing me your President, and in rendering my thanks I assure you your action has given me the very greatest pleasure.

The position in which you have placed me is one which holds my imagination and exercises a fascination over me more perhaps than any in the bestowal of our Alma Mater. Early associations cast a halo over things, and when I, as a member of this Society, first used to sit upon those benches, or rather upon their predecessors, whose red morocco I recall with pride, there grew up within me a feeling of the dignity of the President's office and the good fortune of him, the happy incumbent of it, which was quite extraordinary. "The glamour of the time is o'er me yet," for, gentlemen, ours is the most ancient of similar societies in the country, and very many of those whose names illumine the path of our profession's progress have been members of it, and if I were to read you the list of those who have successively occupied this chair the recital would certainly add somewhat to your feelings of awe, and you would have no difficulty in understanding my own feelings of trepidation now that I find myself in their place. I will try to do my best, however, and hope that on the whole our present session will be so successful, so full of scientific interest and social value, as not to fall behind the majority of its distinguished predecessors. The high scientific character of these meetings is well known; a large proportion of the papers read being of great original merit and by no means unworthy of being placed side by side with the weighty productions of that august assembly the Odontological Society.

* Delivered before the Students' Society, Dental Hospital of London.

Not only is the society of value to the cause of science, but to you, its members, its value is inestimable. There is no more certain means of advancement in one's learning than writing a paper such as those read before this society. It stimulates the acquisition of knowledge, causes you to marshal your facts your reflections and your speculations into definite order and shape, prevents half knowledge and confusion of ideas, and thus gives you a firmer grip and a more certain power of never forgetting not only your immediate subject, but also all its "entourage," than any thing else with which I am acquainted. Then there is the greatest value in joining the various discussions, so adding to the sum of knowledge, increasing interest and enthusiasm, remedying defects and omissions and causing the truth of the matter to be set on a firmer basis. Any too well marked diffidence in making one's voice heard in public can be by this means overcome, and every member should hold himself in duty bound to speak when feeling able to add somewhat to the true knowledge of the subject or feeling that the best points of the paper are being neglected, or the discussion getting beside the mark. Then the contribution of Casual Communications is to be encouraged, and the giving of specimens to the museum is like the quality of mercy twice blessed, it enriches the collection, and at the same time engenders a spirit of alertness always on the watch for interesting cases, stimulates the happy finder of them to the discovery of all that can possibly be known about them, so that they can be presented in a way which shall be as favourable as possible before the society. Contributions of abnormal specimens from the extracting rooms, models of strange irregularities, models of fractures or other injuries, models of cysts, new growths, or other diseases, are always welcome. The influence, however, of the Students' Society on its social side is, perhaps, even a more attractive topic than the one just considered, important though it be. Here, all the students meet on equal terms, see one another at their best, learn to know and appreciate one another, lay the foundations of lasting friendships and acquaintanceships which are destined to be some of the pleasantest and most enduring in life. A college course at Oxford or Cambridge is often valued most for its social influence, for the polish, urbanity and broadness of view which the intimate association of students together engenders, and for the valuable friendships which it calls into being. Very few dental

students have the advantage of a resident university course; but we have here, in the Students' Society, a means to the self-same ends, which, though much less complete, should for that very reason be made the most of. Every member of this Society must become brighter and better, as well as wiser, for his attendance here. To wish to take every opportunity of furthering our progress in dental science and art is only natural, were it only because anything whereby we are to make our livelihood must, perforce, be interesting to us; but apart from that, and on its merits, dentistry is one of the most interesting of studies. It enters the domain of almost every mundane branch of science. We can find a use for even that latest development, viz., investigation by means of the cathode or Röntgen rays. Fortunately, these rays when emanating from the most approved kind of apparatus are quite capable of penetrating bone, and so disclosing the presence and direction of teeth buried in the jaw, and I should imagine might be made useful in diagnosing certain diseases of the antrum by inserting the photographic film into the nasal fossa—this, by the way. On the other hand, dentistry enters the domain of almost every art and is intensely interesting, not less by the diversity of its processes than by the importance of the results to be achieved by their exercise. Oliver Wendell Holmes refers to it as "Art now so fully illumined by science and in which such admirable mechanical skill has developed itself in every form to relieve suffering, to supply deficiencies, to add in all possible ways to comfort and comeliness." As to the value of the teeth, the object of all our care, how shall it be estimated? The same delightful writer says, "There is no pearl in any crown for which a young queen would give one of her front incisors." And again, he says "We have grown more civil than the Romans, but we know that the beauty of a fine set of teeth and the deformity of the opposite as well as they did." It is true [that men can often conceal the imperfection of their dental arrangements by letting the eaves of a heavy moustache overshadow their mouths. But to woman, to hide whose smile would be to take away half the sunshine of life, and to whom nature has kindly refused the growth that would deprive us of it, there is no element in her wondrous beauty which can take the place of white, even, well-shaped teeth. And as beauty is not a mere plaything, but a great force, like gravity or electricity, the art which keeps it, mends it, and to some

extent makes it, is of corresponding importance. But we must add to this the consideration that speech is so largely dependent on the perfection of the teeth, that our language, we might almost say, loses a letter with every tooth that falls. What can be more painful to witness than the efforts of a hapless friend to bite his consonants out of the alphabet when he is reduced to the condition of the infant, whose boneless gums are unfit for any task but the caressing pressure of the maternal mouthful! And then the humbler, but still necessary function of mastication—how much depends on the ease and perfection with which it is performed? You can tell the state of a village by going to the mill. If it has enough to grind and grinds it well and cheaply, you will find good farms and well fed people; so, if you see a good square jaw, filled with good sound teeth, and moved by a set of muscles that mean business, and do it, you will find, in all probability, that they nourish a sound frame in man or woman. I have never forgotten the complaint of poor Walter Savage Landor—a sadder one than any of the preacher's, it seems to me. I quote it from memory. "I have lost my mind," he said, "that I do not care so much about; but I have lost my teeth, and I cannot eat."

Now, if I may be allowed to speak specially to the more junior of our members as to the manner of pursuing their studies, I would say that one of the greatest difficulties consists in properly dividing between what must be known and what need not be known. This cleavage of the essential from the optional can only be discerned when one has acquired a fair general knowledge of the whole. To this end I should say, firstly, attend very carefully to your lectures, as this is a much easier and pleasanter way of acquiring knowledge than reading laboriously. Then, when reading your necessary books, read them at first right through, intelligently, thoughtfully, methodically, but read them through like novels. Do not bore yourselves at first with remembering details. In this way you prepare the mind for more detailed work later on, and will then instinctively know the relative importance of the different parts. I commend to you Tomes's "Dental Surgery" to be treated in this way; first read it through like a novel, you will find it quite as interesting, it leads you so gradually and persuasively forward. Afterwards study it intimately; you will find depths in it to satisfy your more matured desire and capacity for detail. By all means do

not allow yourselves to waste time at the commencement of your course. Make definite resolves and habits of work from which let nothing tempt you away. Be sure to give your best attention to your lectures and demonstrations, as if you have good lecturers this is the simplest and most natural way of learning. Fill in all the rest of the time during which this hospital is open with practical work at the dental chair. Every evening, except Saturday and Sunday, read, say, from 7 to 11, changing your subject every hour for variety's sake. Keep Saturday afternoon for recreation, outdoor if possible, and evening too, and the whole of Sunday holiday. Make out a definite written scheme of reading, so many pages for each night, from such and such books, thus you can tell beforehand how long it will take to get through the work, and you will not feel hustled and doubtful of getting all the work done in the time. On working evenings, when reading seems tiresome and amusements more attractive, remember that just now you're in harness, and the time for relaxation will be later. If from the first you work steadily like this you will find examinations when they come a pleasure, and failure will be a thing unknown.

Now what I have to say about practical work applies to all. By no means lose a single hour which you can put in at this most valuable training. Try to do so much work in every department that when you leave the institution for private practice you will be completely competent in every practical detail, so that nothing can confront you with which you are not able to cope: so that you shall already have made all your mistakes, so that you can approach every case with confidence, able to meet every likely emergency and carry it through in a workmanlike way. Your object, as students, in operating, is to produce ideally perfect work, not passable or merely serviceable work, but work of the highest class. Time should be no object, always provided you do not waste it. Strive to do perfect work, speed will come by itself. If you try for speed you will end by never rising to a high level. Do all the gold fillings you possibly can. Encourage your patients to have them. No class of work is so prolific in good results and so calculated to bring a great reward as doing large quantities of gold filling in every conceivable kind of cavity while you are at the hospital. All other operations, too, you should practice as much as you can; scaling, extirpation of pulps, treatment of dead teeth, abscesses, regulation cases, crowns, amalgams,

impressions, everything. When you get into private practice you either have too few patients to learn operating properly or too many, so your style should be already formed. While at hospital you have the golden opportunity. If you neglect this you will probably never operate worthily of the name; you will tinker all your lives. With regard to instruments, never stint yourselves. Have everything you want, and of the best. No false economy by way of blunted burs, worn-out pulp extractors and the like. Just while you are not expert is a bad time to be handicapped by tools which an experienced operator would throw away. Keep all your instruments in perfect order and clean; and consider that to insert an instrument into the living tissues without having immediately previously disinfected it is the unpardonable sin. With regard to prizes: they are not meant really for the winners, but for all. The prize actually falls to the man who comes out top of the list, but it is not really meant for him as a reward, it is meant as a stimulus to all to work their best. Therefore, let us always see large entries for the prize examinations, especially the more important ones—dental surgery, dental anatomy and operating—most especially operating. Nothing is more unsatisfactory than to see only a few out of a large class competing for the prize. Let everybody have a try, there is no disgrace in not coming out at the top. With regard to the staff: In a hospital like ours it is very difficult for staff and students to become properly acquainted, and yet the closer the touch between them the better for both. Let every student be sure the staff is there to help him in every possible way, and let him never be backward in taking advantage of this fact. Let him cause the staff to feel he recognises and appreciates their good and disinterested intentions. Make the most of your staff, you will not always have them handy, but if some of them are inclined to be modest, retiring or taciturn, do your best to draw them, question them, work them, encourage them to unload their accumulated knowledge. With regard to your attitude towards hospital patients: Treat them all as if they were private ones. Remember all the subjects of your operations are living, sensitive, responsive beings. In practice there is need for a great quality which enables you to decide when to stand firm to your decision in matters of treatment and when you may reasonably give way in deference to your patient's wishes. "Sweet reasonableness" should often be allowed to sway you; on

the other hand, especially when dealing with surgical conditions of the more important kind, there are occasions when you should stand steadfast like a rock, determined never to waiver until the case has received all the treatment which in your judgment it requires. A very well worn precept says, "Do to others as you would be done by," and threadbare though it sounds, yet, in cases of doubt between opposite methods of treatment, you will find it of the greatest possible use to refer the matter inwards for a moment and say to yourself, "if it were my own case what would I like to be done to me?" One word with regard to your after practice. Try to cultivate the professional spirit. Although our specialty has not very long been recognised as a branch of medicine, it is so now; and we reap the advantages, socially and otherwise, of belonging to that liberal profession. If we consider our own pockets before our patients' interest, we act unprofessionally, and it would be a libel upon trade to say we act in a tradesman's spirit. We are in that case pulling in the opposite direction to the main body of our professional brethren, constituting the tares amongst the wheat. Of course the labourer is worthy of his hire: but let your actions be determined first by considering your patient's interests; second, by considering your own reputation. Every practitioner who is personally esteemed by his patients, and does good and lasting work, is a help and a boon to his colleagues; and, conversely, every one who is in disrepute, or who does bad and non-effective work, is a hindrance to them. It is easy to be seen how inefficient work tends to induce mistrust of dentists, and a low estimate of the value of dental services generally in the mind of the public. "Every man should have a hobby," and particularly every dentist. He should have several. They prevent the mind from getting fossilized and narrow, and give unfailing resource and pleasure when otherwise life would get monotonous and tiresome. The pursuit of some pure science or fine art, for example, is a never failing pleasure, as it is inexhaustible, and it is only in effort and struggle that keen pleasure is to be found. On the other hand, while students, you had better not let your hobbies carry you away so that they interfere with what has first claim upon your time. Your studies are so varied, your studentship so short, that the need and desirability of extraneous pursuits are largely set aside. Let us always strive to do our best with everything we have to do. Let us be able to say "'Tis not in

mortals to command success, but we've done more, deserved it." In the material sense, "a man's life consisteth not in the things which he possesseth," but when such unmaterialities are included as "mens conscia recti," then we have an indication of the possessions in which a man's life really consists.

In conclusion, there is, I fear, much in this address which you will say tastes of the lay sermon, but I am very rarely given to preaching, and, therefore I hope you will forgive me this once, and now, finally, I repeat my thanks to you for the honour you have done me, and express the pleasure with which I look forward to the many interesting and enjoyable meetings which I hope to have with you during my presidential year.

CYSTS OF THE REGION OF THE MOUTH.

By O. C. PENFOLD,*

MR. PRESIDENT AND GENTLEMEN,—In speaking about cysts to-night, I do not wish to treat the subject very exhaustively, except so far as concerns those of the mouth, these being those with which we have to deal. To commence with, I was informed, a short time ago, before I began to write my paper, that there were 75 cysts, 76 classifications, and 113 definitions. We won't discuss all the classifications nor definitions to-night, but I will endeavour to give a general idea of a few of them ; to begin with, a definition of a cyst.

A cyst may be defined as a cavity of new formation, or one resulting from abnormal distention of a natural space, surrounded by a more or less distinct wall and filled with fluid or semi-solid matter, according to its origin. The wall of the cyst is lined with epithelium or endothelium, or by no definite cellular layer. An accurate classification is difficult, because conditions pathologically similar are clinically spoken of as cysts in some parts but not in others.

We may divide our cysts into four classes : (1), Cysts arising from pre-existing spaces ; (2), Cysts of new formation ; (3), Congenital cysts ; (4), Parasitic cysts. These classes are sub-divided again, according to where they are found or formed, under our first class *i.e.*, cysts arising from pre-existing spaces : (a), Exudation cysts : (b), Retention cysts.

* A Paper read before the Students' Society of the Dental Hospital of London.

As I describe each cyst, I want to give, as far as I can, what they are like, how they are formed, their diagnosis and treatment. As an example of an exudation cyst I will commence with those small cysts which are found in connection with erupting teeth.

The gum over the coming tooth is enlarged, but the enlargement is circumscribed, has a bluish or purple colour, and yields to pressure. If an incision is made into it a small quantity of transparent fluid will escape ; sometimes there is a slight effusion of blood. There is no inflammation present.

This swelling was produced by an abnormal secretion between the enamel of the erupting tooth and the follicle or tooth sac. Normally but a slight amount of fluid is present. It is not certain whether the lining of the cyst was composed of the fibrous tissue of the sac or structures external to it, it is probably the former.

The inconvenience is but slight. The treatment would be to incise the swelling, which would give exit to the secretion and aid the eruption of the tooth. I have not heard of one forming over permanent teeth, though I suppose it could occur.

Now we can turn to our second sub-class : Retention cysts—They are formed by retention of secretion and consequent dilation of the ducts of glands. There are three forms in this class :—(1) Sebaceous cysts ; (2), Mucous cysts ; (3), Cysts produced by special ducts, as the salivary duct.

About sebaceous cysts I don't think I need say anything—as they don't occur in the mouth. Mucous cysts are more important : they are formed by the dilatation of mucous glands, and occur in the lips and mouth and other situations where mucous glands exist. In the mouth they constitute one form of Ranula, which I shall presently describe. The walls of mucous cysts are thin and the contents viscid, mucoid and with cholesterine (a crystallisable monatomic alcohol) ($C_{27}H_{45}HO$).

In the tongue, these cysts are generally small, round and tense ; they give no pain, and grow slowly. In the lips, especially the lower, the cyst is about the size of a cherry, hard, smooth and translucent, and contains a glairy fluid. In both these cases excision of the cyst is the treatment.

Now we will revert to the Ranula. This, possibly, might be classed in the cysts produced by special duct of glands, but there are reasons, which I will enumerate, why this is not done.

It is a bluish white, semi-translucent, globular or ovoid swelling in the floor of the mouth, beneath the tongue, and containing a glairy mucoid fluid. It is probably an enlargement of one of the numerous mucous follicles found in that situation. It was said to be due to the dilatation of Wharton's duct or Bartholin's duct. But these have been proved to be patent, when these cysts exist, by being able to pass a bristle down them. Therefore they are not classed under cysts of special ducts. The swelling is quite painless, but is uncomfortable, and is an inconvenience during speech and deglutition.

Its treatment is fairly simple. It consists in painting the surrounding parts with a 20 per cent. solution of cocaine; a portion of the cyst wall should be seized in a pair of surgical forceps, and a good sized piece excised with curved scissors. A good hold must be taken, or the mucous membrane, which sticks loosely to the cyst, may alone be caught up.

Then squeeze out the fluid, and cauterize the lining membrane with silver nitrate or Zn Cl_2 , 20 grains to 1 ℥. It is advisable to keep the opening clear, as it is apt to re-form. The daily passing of a probe into it will be sufficient. If this treatment fails the cyst should be dissected out.

There is another disease connected with mucous glands which is of interest—that is, the so-called hydrops antri. In this disease there is a gradual painless dilatation of the antrum. Its outer wall becomes thinned and gives the sensation of crackling, like parchment, on pressure; fluctuation is readily obtained through this thinned bone. Sometimes the inner wall may be involved. It was formerly supposed that a constant secretion of mucous from the lining membrane of the antrum took place during ill-health, and that this was able to drain away by the foramen leading into the nose; but that if the foramen remained closed the fluid collected, producing the condition known as hydrops antri.

The opening of the antrum, however, being at the upper part of the inner wall, fluid could only escape when this level was reached, and the cavity would always contain a considerable quantity of liquid, instead of being an air cavity and normally empty. It has been pointed out that the fluid is unlike mucous, being yellow, serous and charged with cholesterin. This disease usually, if not invariably, originates from the growth of a cyst, or cysts, either in

the antrum itself or on one of its walls, these cysts being due to dilation of the glandular follicles of the mucous membrane. The treatment consists in perforating the antrum and allowing the fluid to evacuate, the parts close up and the symptoms disappear.

We still have the third sub-class—the cysts connected with special ducts. A few words will suffice for these. They are caused by calculi blocking the passage of the secretion and thus causing dilation of the duct. An incision should be made over the calculi and these removed with a scoop. This then will finish all that I have to say about the first division of cysts.

The next division, or cysts of new formation, contain some very interesting kinds. Two especially are interesting to us, and they are called—(1) Dentigerous Cyst, and (2) A true Dental Cyst. We will commence with the latter.

These are true cysts, connected with the roots of fully developed teeth, and they occur both in the upper and lower jaws. Their size differs—they may be small or they may be large. The teeth with which they are in connection are always carious, and when they are extracted the cyst wall is frequently adherent.

Their origin is obscure. M. Malassez has described aberrant masses of epithelium in the dental periosteum and it is possible that under the stimulus of dental irritation they may develop into cysts. It will perhaps be of some interest if I endeavour to show how epithelium is found in the periosteum. In the early stages of tooth development the epithelium covering the jaws thickens and dips downwards; the mesoblastic tissue underneath proliferates into papillæ which opposes the on-growth of the epithelium. This epithelium, however, spreads round the papilla; the form, at this stage, being like a dinner bell, the epithelium forming this part, whilst the mesoblast is in a mound in the concavity of the bell. And just as there are two surfaces to the bell, so there is an internal part and an external part to the epithelium. The internal part forms enamel. Now the external part of the epithelium has no decided function given it—some say it atrophies; others say it forms Nasmyth's membrane—but whatever becomes of it, it will be easily seen how bits of the epithelium may be left and by irritation become cysts. I have omitted to say how they get into the periosteum; but that is quite evident, if we remember that surrounding

the tooth is the tooth follicle, which will eventually form periosteum. Whether this is exactly how these cysts arise is perhaps doubtful, but still it should be remembered that cysts are developed in connection with teeth, and masses of epithelium are found in the periosteum.

When these cysts occur in the lower jaw they give rise to expansion of the bone, which may become so thin as to cause the sensation of crackling.

In the upper jaw they may, besides causing thinning of the jaw, push up the antrum and cause swelling to appear on the cheek.

They may be mistaken for something more serious than a dental cyst.

In the first instance the morbid process is probably identical with that resulting in the formation of an alveolar abscess, but the process being less acute, a serous cyst is the result. The fluid contents contain cholesterine.

The treatment consists in the removal of carious teeth—this will expose the cyst, the walls of which must be as far as possible removed—then pack the cavity with lint dipped in carbolic (1 in 20) or zinc chloride 20 grs. to the ounce. Granulations form and the cavity heals up by second intention.

We must next consider another form of cyst, the dentigerous cyst, these cysts are found in both upper and lower jaws, and usually arise in connection with teeth retained in the jaws, generally bicuspid or molars. They cause great distention of the jaws and have often been removed by operations of needless severity. They but rarely occur with temporary teeth. But teeth which lie buried in the jaws, do not by any means invariably give rise to irritation, numerous examples of teeth occupying abnormal positions are found with no signs of disease about them, and teeth have been extracted where between the fangs was an inverted tooth which gave no trouble and would not have been found unless it had been necessary to extract the tooth.

But in a certain number of these cases these retained teeth cause to be developed round them a cyst with bony walls.

The walls of the cyst vary in thickness and consist of fibrous tissue, outside which comes a bony shell formed by the bone of the jaw, expanded over the growth within it. This wall may become calcified. Some of these cysts have been found to be lined with

distinct polyhedral epithelium. It has been supposed that the epithelium got in from the gum, and shreds often hang loosely into the cavity, which has been supposed to be uncalcified parts of tooth germs, as they sometimes bear small nodules of enamel and dentine.

The retained tooth may be loose in the cavity, or it may have the crown projecting into the cavity, its root buried in the cyst wall.

The tooth is often inverted, and is generally badly formed with truncated roots. The cyst is usually filled with a clear glairy fluid in the first instance, but it may inflame at some period, and its contents will then be pus, or, perhaps, a yellowish fluid loaded with cholesterin. When one of the cysts is developed in the upper jaw, it is very common to find the antrum involved, and one very curious case occurred where the cyst grew into the antrum from the jaw, and the cyst wall calcified there, presenting the appearance of a fragile bony shell attached only at one point, and everywhere else free of the walls of the antrum. In the cyst was a supernumerary tooth.

No reasonable doubt can be entertained that the teeth are primary sources of this mischief, aided by constitutional tendencies on the part of the patient. But as to how these things come about morphologically is difficult to explain. As in the case I gave at the beginning of my paper, the small cysts over temporary tooth, fluid collected between the enamel of the tooth and the tooth sac. This may go on to a large extent, and the contiguous bone is removed to make room for it.

I mentioned just now that the walls of the cavity calcified, they may, however, suppurate, though this is rare. The character of the cyst is thus changed and may simulate more serious diseases.

The recognition of dentigerous cysts in early stages is exceedingly difficult, and they have been mistaken for solid growths. As a rule they grow slowly, and are often painless, unless inflamed. The surface of the tumour is rounded, hard and smooth, or it may be lobulated from the existence of several cysts. They generally occur in persons under 30, but this would not be quite a safe guide in the diagnosis. But a very important point to look for is the absence of one or more teeth from their proper place.

The treatment consists in cutting away a part of the wall of the cavity, scraping the interior thoroughly, removing the tooth, if present, and packing the cavity with iodoform gauze. This must be

changed daily, after the cavity has been syringed with carbolic 1 in 60. The cavity will heal up by granulation.

There are two other cysts somewhat connected with the dentigerous cyst, but I will not discuss them so fully as the dentigerous cyst. They are the multilocular epithelial cyst and a compound dentigerous cyst.

The first occurs mostly in the mandible. It is of slow growth and arises from the persistence of the epithelium of the enamel organ. It is common in young people and does not recur after removal. The cyst is of small size—about the size of a filbert—and consists of a nest of cysts. The walls are fairly hard and it contains a brownish fluid of mucoid character.

The second one, the compound dentigerous cyst, is similar to the ordinary one, except that instead of finding one tooth missing in the jaw, and that one in the cyst, you find two or three teeth missing from the jaw and numerous teeth in the cyst.

There was a case reported in the transactions of the Odontological Society in 1862 where no less than twenty-eight teeth were found ; they were mostly supernumerary.

The treatment of both these kinds of cysts is similar to the one described under dentigerous cysts.

This finishes our second classification ; we must now turn to our third class, or congenital cysts.

Under this heading I will describe the dermoid cyst, that is, cysts lined with skin or mucous membrane, and resulting from inclusion of the epiblast within the mesoblast during development. Two kinds occur in the mouth, palatine and lingual. But I should like to describe first how these dermoids, as they are called, are arrived at. In the very earliest stages of development the germinal membrane or blastoderm divides into three layers, viz., epiblast, mesoblast, and hypoblast ; though at first the blastoderm is flat.

In the process of development it becomes folded on itself, and thus encloses the abdominal cavity. The mouth and neck are developed from lateral processes, branchial arches, which move downwards till they meet in the midline. Between these arches are fissures, the branchial clefts. The lateral parts of the face are developed in the same way, while the nose and middle parts above the mouth are derived from a descending process coming from the frontal region. The face and throat are formed by a coalescence of all these. Thus

it can easily be seen how this process, a portion of the epiblast may become included and remain embedded in the tissues belonging to the mesoblastic layer. Should this happen, a closed cyst may be formed lined internally with structures proper to the skin and yet entirely unconnected with it. Their contents are usually rather thinner than those of the ordinary sebaceous cyst, though closely resembling them in appearance, and they are occasionally formed in the floor of the mouth, palate and tongue. They contain squamous epithelium, hair and cholestrin.

Treatment consists in extirpation of the cyst, which is generally satisfactory and generally easy.

Our last, the parastic cyst, has for an example the hydatid cyst. They are the cystic stage in the development of the cestode worm known as *Taenia Echinococcus*.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly meeting was held on the 7th ultimo, the PRESIDENT, Mr. W. E. Harding, in the chair.

The minutes of the previous meeting having been read and confirmed Mr. C. A. Malone, L.D.S.Eng., of Manchester, was proposed as a non-resident member, and Mr. William May, L.D.S.Eng., of Kilburn, as a resident member. The following gentlemen were balloted for and duly elected:—Dr. J. E. Grevers, Amsterdam, Mr. G. N. Willis, East Dulwich, and Mr. T. Constant, Scarboro'.

The LIBRARIAN (Mr. W. A. Maggs) announced that they were indebted to Mr. F. J. Bennett for nine bound volumes—1887-1896—of the "Transactions of the Pathological Society," and to Mr. Storer Bennett for 14 bound volumes—1885-1897—"Transactions of the Medico-Chirurgical Society," also to the same gentleman for two volumes—1896-7—"Transactions of the Clinical Society." Mr. Christopher Heath had kindly presented a "Manual on the Injuries and Surgical Diseases of the Jaws," by Dr. J. S. Marshall.

The CURATOR (Mr. Storer Bennett) stated that he had been able to purchase for the Society an exceedingly interesting specimen, namely, a piece of secondary dentine from the tusk of an elephant's tooth. It was very irregular in structure, and evidently formed as

the result of irritation from a leaden bullet embedded in a portion of it. No doubt at some considerable time previous to obtaining the specimen a bullet had been shot into the thin part of the tusk. The bullet was very much flattened and altogether mis-shapen, but after a time it ceased to become a source of irritation and ivory formed round it, giving it the appearance of being as much a portion of the structure as some of the secondary dentine in its neighbourhood. The greatest interest about the specimen was that had the bullet been of some other metal instead of lead, it would not have been closely surrounded by ivory, but would have lain quite loose in a large cavity.

Mr. F. W. BARRETT exhibited a skull found by a friend travelling in North-West Canada. It came from the neighbourhood of Vancouver Island. From the shape of the skull, especially from the apparently artificially flattened forehead, and from the very large lower left third molar—the only one of the series which happened to be left standing—the skull was probably that of a male adult Indian belonging to one of the aboriginal tribes inhabiting those parts. The chief point of interest lay in the extreme amount of attrition that occurred in all the teeth, which he thought might possibly be ascribed to the low temperature (40° to 60° below zero) in which they lived; to the fact that their food, consisting chiefly of frozen fish, meat and grain, was eaten in that condition owing to the want of means for cooking. His friend informed him that not unfrequently these native Indians, soon after having lost their teeth, die of starvation on that account.

Mr. H. BALDWIN said that he had often been struck that among all the theories brought forward to account for caries of the teeth the one based on the Darwinian was the one which afforded the best explanation, and to have it definitely mentioned that the Indians on losing their teeth died apparently from that cause was a very important point in that connection.

Mr. H. LLOYD WILLIAMS said the fact of the teeth being ground down had been very frequently observed, and there were a great number of skulls in American museums showing this. Mr. Barrett had referred to the flattening of the forehead, but Mr. Lloyd Williams did not remember hearing of this peculiarity among any of the North American Indians. In Mexico it was very common, but amongst the Indians about the Hudson Bay and the cold districts

the plan generally adopted was to put a piece of wood on the top of the head so as to get that part flat.

Mr. ASHLEY BARRETT thought the cause of the great wearing of teeth was of interest. He gathered from reading a book by Mr. Whitney, who had been recently travelling and hunting in North West Canada, that the staple article of food on which he and his Indian servants lived was fish which had been taken from the lakes and had been frozen for months. This writer mentioned that the temperature frequently ranged from 40° to 60° degrees below zero. Mr. Barrett imagined at that very low temperature the ice necessarily mixed with the frozen fish must have a great wearing tendency on the human teeth.

Mr. F. J. BENNETT said that it was scarcely conceivable to follow Mr. Barrett in his deduction that the Indians were in the habit of masticating ice. Physiologically he should think those savages very likely to drop off very soon indeed, with or without the loss of their teeth. Members should not be hasty in accepting the dogma that when these people lose their teeth they die off rapidly. He would rather say that when they degenerated rapidly they lost their teeth. Usually it was understood that the wearing of the teeth was greatest in grain eating people, and not in flesh eating.

Mr. F. W. BARRETT, in a brief reply, said that from reading a book in the Guildhall Library he thought that it was the custom among the North American Indians, as well as the Mexican Indians, to flatten their heads by a very hard substance.

Mr. H. L. ALBERT then read a paper entitled "The Sulpho-Cyanide of Potassium in Saliva." The method hitherto employed in the quantitative analysis of the sulpho-cyanide of potassium in saliva had been an extremely laborious one. With the help and at the suggestion of his friend and colleague, Dr. Buchmaster, he had devised an apparatus by which its amount could be estimated with the greatest ease and in a few moments only. In the hope that it might help in unveiling the mystery of the origin, physiological and pathological significance of the salivary salt, he ventured to bring it to their notice.

Having given a resumé of what little was known on the subject, Mr. Albert proceeded to say that he had tried the ingestion of the drug in four rabbits, the amount used being between one and two grammes mixed with about ten of bran a day. In every case death

resulted in about a week. The symptoms produced were alike, viz., emaciation and loss of hair. In two a marked atrophy of the salivary glands was found, and in one of these, after dipping in a solution of ferric perchloride, a microscopic examination was made, the ducts being found more deeply stained than the gland tissue. In all four large quantities were found in the urine and fæces; in fact the drug seemed to permeate, as far as one was able to judge, every organ and tissue, and to find its way in every secretion and excretion, even to the cerebro-spinal fluid. The emaciation was the most marked feature, bearing as it did on the statement of Dr. Fenwick, that the elimination—if it be an elimination—of the sulpho-cyanide by the salivary glands, was a measure of nutrition occurring in largest quantities in the saliva of those who are well nourished, and vice versâ. He could from the observation of some few cases confirm this. He should say the emaciation in the rabbits was undoubtedly dependent on the ingestion of the drug, the normal quantity of bran being eaten. Of the pathological significance, Dr. Fenwick, in some lectures on functional diseases of the liver, quoted in the *Lancet* of 1887, pointed out that those diseases where nutritive efforts were called forth were invariably accompanied by an increase of sulpho-cyanide, and further stated that for its appearance in the saliva the bile must enter the duodenum. He added that as the two are so closely associated it was obvious that the salt owed its origin to some action of the hepatic cells. Assuming it possible to construct some permanent means of measuring the amount of the salt in saliva it was obviously necessary to avoid those sources of fallacy in the methods hitherto employed, hence comparison with coloured fluids was discarded. On the suggestion of Dr. Buchmaster, it was thought possible to adapt Oliver's hæmoglobinometer to their purpose. This instrument, the outcome of much labour and thought, was a means whereby the quantity of hæmoglobin was found by contrasting solutions of blood with graded red glasses, each of which corresponded to a known percentage of hæmoglobin. Resolving to use unfadeable coloured glass instead of fadeable coloured fluid as a means of comparison, it was necessary at starting to try the three tests for the salt, in order to ascertain which was simplest and which gave the best colour. Of these three tests the guaiacum was discarded, it being found necessary to make fresh preparations of

that drug so frequently. The perchloride test was decided on, on account of its simplicity and sensitiveness. Determining to use the red colour of the iron reaction, the next stage in the experiments was to obtain a colour with a solution of the sulpho-cyanide of the same strength in which it occurred in normal saliva. This normal amount was based on the mean of Fenwick's estimate of from $\cdot 01$ to $\cdot 006$ per cent.

To a $\cdot 008$ solution of sulpho-cyanide, therefore, liquor ferri perchloridi was added and sent to Lovibond's Colour Laboratories, Salisbury, in order to have the colour reproduced in glass. In due course they were returned, and the colours were found to be exactly matched. It was at once obvious that by a series of graduated red glasses of the same shade as known strengths of sulpho-cyanide solutions, to which iron had been added, it would be possible to easily read off the per centage quantity of the salt in different salivas. It was only in the details of the experiments that any difficulties arose; of these, the most serious was overcome by his colleague, Dr. Slater. Potassium sulpho-cyanide being so extremely hygroscopic it was found impossible to make up an accurate solution in the ordinary way. Dr. Slater kindly made one, by the titrating process, so accurate as to come almost within Frerichs' variations of the normal. The solution was subsequently tested by Dr. Gardner, the lecturer on chemistry and physics to St. George's, and found practically correct, the exact strength being $\cdot 010228$ per cent. Not caring to trust to either the tincture of iron or the strong liquor, some trials were made with solutions of the neutral perchloride in order to produce the best colour when mixed with the normal solution of the sulpho-cyanide. Some difficulty in weighing the iron occurred owing to its extreme deliquescence. After many trials a 50 per cent. solution was found to suit their purpose best.

The principle upon which the measurement was based had been exhaustively described by Oliver in the Croonian Lecture of 1895, which might be consulted by those who were sufficiently interested.

Having an unvarying and fixed means of quantitative examination at disposal, it only remained to construct a graduated series of shades of red corresponding to the varying per centage of the salt in saliva, as evidenced by the depth of colour produced by the iron reaction, and to make the method of examination itself unvarying.

This gave rise to much consideration on a variety of grounds, which Mr. Albert set forth.

The requisite colour standards having been made, and all the details settled, it was only necessary to send the former to Lovibond's Colour Laboratories at Salisbury to have the colours matched in glass. The colours were reproduced so perfectly accurately that no trained eye even could detect the slightest difference. The glasses were mounted in series in a convenient forms for handling.

The complete apparatus consisted of: (*a*) test tube, fitted to economise space, over (*b*) centimetre measure; (*c*) scale of colours; (*d*) cell; (*e*) cover glasses; (*f*) pipette for measuring the iron; (*g*) camera tube for contrasting the colours; (*h*) riders. For clinical work they were packed in a small case, in which room was found for the candles. Besides these, for laboratory work, it would be as well to have a metal camera tube on a stand. He had a miniature dark room made and painted black, to exclude all light but that of the candle placed within it. At the lower aperture of the camera two holes were perforated, under one of which was placed the saliva to be examined, and under the other the colour standard with which it was to be contrasted. To one side of the upper aperture a piece of green glass was attached, for the purpose of refreshing the colour vision should it become fatigued.

The method of using the instrument was as follows: Some saliva is first collected in a test tube and 2 cc. poured into a centimetre measure. By this little manœuvre the air bubbles are retained in the test tube. To this 1 cc. of glacial acetic acid is added, and shaken a little to ensure complete mixing. Next the .045 cc. of iron is taken up and mixed with the acid and saliva, it being necessary to pass them two or three times up the tube of the pipette to make certain all the iron is added. The cell is then filled from the centimetre measure, and a cover glass—which is absolutely colourless—placed on top. If the cell is accurately filled to 2 cc. a small air bubble will be seen on the surface of the fluid. It is then placed under one hole of the camera, and the standard with which it apparently corresponds placed under the other. The candle is then lit and placed in such a position as to light the surfaces of both saliva and standard. If the two colours correspond the amount of the sulpho-cyanide is at once known. If they do not it is only necessary to shift the standards till one is found of the same

shade. Should none be found to exactly match, the riders are brought into use, taking care that for every rider employed an additional cover glass be placed on the cell in order to equalise the reflecting surfaces.

Mr. Albert, in conclusion, said of what use the instrument might be remained to be seen. He had tried it enough to be able to contradict Schiff's statement that the sulpho-cyanide bore some relation to decomposition. He could also say its existence did not in any way depend either on the presence of carious teeth or on the use or non-use of tobacco.

DISCUSSION.

Dr. BUCHMASTER thought it would be agreed that Mr. Albert had produced a perfectly reliable and excellent method for determining the quantity of potassium sulpho-cyanide in saliva. The method depended upon a principle which was the first time put into practice by Dr. Oliver for the determination of the hæmoglobin in the blood. It struck Dr. Buchmaster that the same principle might be applied to sulpho-cyanide, and he suggested it to Mr. Albert, who had worked out the method. All the methods hitherto existing for quantitative determination of sulpho-cyanide in saliva had been laborious chemical methods. He thought that in the Odontological Society, where it was certainly quite a moot point as to whether sulpho-cyanide was or was not the cause of caries, that possibly the work of Mr. Albert would have far-reaching consequences. Mr. Albert's instrument was as perfect for the determination of sulpho-cyanide as Oliver's hæmoglobinometer was for determining hæmoglobin.

Mr. KENNETH GOADBY concurred with Dr. Buchmaster as to the extreme usefulness of the new method, and congratulated Mr. Albert on having undertaken the work. Dr. Buchmaster had referred to the probable relation of sulpho-cyanide to caries. Mr. Goadby thought that most of the members of the Society would agree that the theory of caries which generally held the field was one which quite excluded any idea of the action of sulpho-cyanide. Mr. Albert stated that Hugon Schmidt had found that sulpho-cyanide had a distinctly bacteriocidal action. Mr. Goadby could not confirm this, because in two of the special mouth organisms in some cultures he had now, and which he hoped to describe before long, he found that 5 mgs. per cent. of sulpho-cyanide had no action whatever, and

that between an ordinary broth and a sulpho-cyanide broth there was no distinct difference at all. Dr. Fenwick seemed to think that the origin of sulpho-cyanide in the body depended largely on the bile flowing into the intestines, and he also said it was less in atonic dyspepsia and cancer of the stomach. Lintzsche had found that the sulpho-cyanide might be formed in the body from the digestion of the higher fatty acids, and he had also shown that if proteids were digested with potassium cyanide the result was a yield of potassium sulpho-cyanide. As to the connection between tobacco and caries, Mr. Goadby thought Mr. Fenwick had shown pretty conclusively that it did not make much difference.

Mr. WALTER H. COFFIN thought that those who had tried the methods hitherto employed, which had always been very tedious and uncertain, would appreciate what seemed to be the very perfect method Mr. Albert had introduced, and it was to be hoped that Mr. Albert would be able to use it to clear up many contradictions which occurred in the text books. He believed that in a very short time it would set at rest some disputed points still to be determined. Some of the authorities declared that sulpho-cyanide was only found in parotid saliva, and others said it existed in sublingual only, and so on. Certainly they seemed to be quite in the dark as to any useful part it played in the animal economy. As to the action of the quantity normally found, some further information was required. If he recollected rightly, taking the average numbers as reported, the parotid gland in the human adult would secrete in about twenty-four hours a grain to two grains of sulpho-cyanide of potassium. It seemed a very surprisingly large amount of an inorganic substance so highly poisonous, and at first one was struck with astonishment that the human organism should secrete in an apparently endless way such a large quantity of so poisonous a compound. It was an interesting point with regard to the cyanogin compound that the first knowledge of cyanic acid and the oxides of cyanogin was obtained when analysing a specimen of urinary calculus. The researches revealed the constitution of cyanuric acid, and then uric acid and the urates in the urea. It was in that little corner of chemical research with the synthesis of urea that came from these discoveries that the supposed impenetrable barrier between organic and inorganic materials was first broken down. Mr. Coffin congratulated physiological investigators on having such a very simple

method in place of the method which, from his own experience, had always been laborious and very unreliable.

Mr. ALBERT briefly thanked the Society for the reception accorded to his Paper, and the usual votes of thanks having been passed, the meeting adjourned to March 7.

At the Manchester Assizes, on February 9th, Rose Goodhead sought to recover damages from Alice Mitchell for unskilful treatment in the extraction of teeth, the allegations being that the defendant had falsely represented that she was a dentist. The defendant said she had never represented herself as a dentist, and had not been guilty of any negligence. The plaintiff is the wife of a locksmith living in Bolton. On the 4th June last she was suffering from toothache. On the advice of her husband she went to a place where the defendant carried on business. The defendant's husband had been a qualified dentist, but he died 10 years ago, but she had kept up the plate and lamp outside the house placed by her deceased husband, announcing that he was a dental surgeon. The defendant, according to the plaintiff, drew out the stump of a tooth, and tried to draw a second, but failed. The plaintiff's gums were very much swollen, and the defendant was said to have told her to come again in a few days, when the swelling had gone down. The swelling got worse, and the plaintiff went to a dentist named Patterson, who advised that she should go to the dental hospital. The plaintiff suffered from periostitis, and it was suggested that the defendant had caused this by her unskilful work, and also that the instrument she used was not strictly clean. The defendant denied that she had drawn any stump at all, and declared that the excessive swelling was present when the plaintiff came to her. Dr. Parke was called as a witness by the defendant, and expressed the opinion that drawing the teeth did not originate the mischief. Dr. William Thorburn gave evidence as an expert witness. He was of opinion that the symptoms described were consistent with other causes as well as unskilful dental treatment. He considered it could not be said that it necessarily followed from the evidence that the plaintiff had suffered from such treatment. The jury found for the plaintiff damages £35.

THE DENTAL RECORD LONDON: MARCH 1, 1898.

AN INEXPEDIENT LETTER.

A LETTER has appeared in the *British Medical Journal* which calls for comment. The writer, while he would hail with satisfaction the appointment of a dentist to the Medical Council, "declines to join in the cry for a dental representative." Now we admit that the writer is well within his moral right in penning this letter; but we ask, was it expedient to do so? At the present moment an attempt is being made to obtain the appointment of a dentist to the next vacant seat on the Medical Council. This, as the letter puts it, would be "a deserved compliment to an important body of surgical specialists," and would be a matter for satisfaction; is it therefore wise to write in such a way as to suggest that, after all, dental surgeons are lukewarm in support of this application? It is not to be supposed for a moment that each member of our profession feels equally keenly the need of this appointment, and it may be admitted that many would probably prefer to obtain some other thing. But, surely, when public action is taken in a matter which all must admit to be desirable, it is inexpedient to seize such an opportunity to air our private differences. To our mind these private differences are a sign of intellectual vigour. To level down these differences would be to check professional growth. Nothing tends more to quicken thought and to awaken interest in a subject than a discussion between two differing schools; but in a balanced mind such differences are checked and controlled by consideration of the common weal. It is not sufficient simply to be sound in our principles and to be working for a common end: we must be content to sink individuality, when, having expressed our opinions, we find ourselves unable to convince the majority, and when individual action tends simply to defeat that being done

which we desire done, but in some other way. To push opposition beyond this point is the action of an uneducated egoist. Possibly, we are all egoists in secret ; but surely the object of what is known as education is to teach us to subordinate our actions and opinions to what is clearly demonstrated as the accepted opinion. It is not a question of abandoning principles or opinions, but simply of allowing the judgment of others to be of equal value to our own. Nor need there be hesitation in urging such views as we hold to be right at all proper times and seasons ; but publicly to oppose our confrères because they do not happen entirely to agree with us is only less small minded than to retire sulking to our pet lair. Our profession has suffered much already from private differences being carried to the extent of public opposition. Need we say more to emphasize the fact that whilst it is good to argue in our private gatherings what we each believe to be right, in public the will of the majority should be loyally supported.

News and Notes.

MR. KEVIN E. O'DUFFY, L.D.S.Edin., has been appointed Dental Surgeon and Lecturer on Dentistry to St. Vincent's Hospital, Dublin.

DR. MAX SICHEL claims to produce a pure white guttapercha by dissolving guttapercha in chloroform and leaving the solution in contact with chloride of lime for a week. After this it is filtered and placed in the sunlight for another week.

THE Pharmaceutical Society is promoting a Bill in the present Parliament to enable chemists and druggists to become full members of the Society. At present only pharmaceutical chemists are entitled to sit on the Council, to obtain members of which seems an increasing difficulty.

A COMMITTEE has been formed to organise the International Dental Congress to be held in Paris in 1900. MM. Godon, Papot, Vian, Richard Chauvin and Martinier, have been nominated by l'Ecole Dentaire de Paris, and MM. d'Argent and Lemerle and Drs. Sauvez and Maire by la Société d'Odontologie.

THE annual general meeting of the British Dental Association will be held at Bath, on Saturday, May 28th, Whit-Monday, 30th, and Tuesday, 31st, under the presidency of W. A. Hunt, L.R.C.P., M.R.C.S. We understand that the Mayor of Bath will hold a reception in the Roman Baths.

AT Newton Abbott, on February 11th, a dentist sued a farmer for £10 10s. for a set of teeth. The defendant went to plaintiff for a set of teeth and a model of his mouth was taken. When they were ready he was given notice, but so far as plaintiff knew defendant never attended to have them fitted. At the expiration of six months the teeth were sent to defendant by registered post and he kept them for two years. Judgment was given for the plaintiff for £10 10s. and costs.

AT a meeting of the City of London Guardians the clerk reported the receipt of a communication from the Local Government board asking if any alteration had been made in the diet of the inmates of the board's institutions "who were suffering from loss of teeth." The letter, the reading of which caused much amusement, was referred to a committee for consideration and report.

THE Rt. Rev. the Lord Bishop of London, one of the Vice-Presidents of the Hospital, will take the chair at the annual general meeting of Governors of the Dental Hospital, London, on Thursday, the 17th March, at half-past five o'clock.

THE following gentlemen, having passed the necessary examination, have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons in Ireland:—Mr. J. R. Blackwood and Mr. E. D. Bower.

THE meeting of the Midland Branch of the British Dental Association, at Warrington, on February 19th, appears to have been a success. Mr. Thomas Fletcher showed those attending over the works of his firm, Messrs. Fletcher, Russell & Co., and at a "tea," to which the members were invited, he announced that he would present to the Liverpool Dental School similar prizes to those he already gave to the one at Manchester.

THE Ninth International Congress of Hygiene and Demography will be held at Madrid, from April 10th to 17th of this year. Though there is not a section in the congress specially devoted to dentistry, papers relating to oral hygiene can be read, and a "Dental Assembly" will be held at the same time under the auspices of the Spanish Odontological Society. The subscription to the congress is 25 pesetas (£1), and each member will be entitled to a copy of the transactions. The Spanish railways will grant to members a reduction of 50 per cent. in the fares, and it is expected that foreign railways will make a similar reduction. Ladies will be admitted to all the social and other non-professional privileges by a payment of 10 pesetas. There will be a reception in the Royal Palace, given by Their Majesties, a reception and a banquet in the City Hall, by the municipal corporation of Madrid, a fête by the Provincial Deputation (perhaps a bull-fight), a court representation in a theatre, a banquet by the minister of the Interior to the Foreign Delegates, etc. Besides those general entertainments, the executive committee of the Dental Assembly is arranging a banquet for the members of the same, an excursion to the country and other festivities. There will be free admission to the museums and public buildings. Excursions are being arranged to the Escorial, Toledo and Granada. The executive committee of the Dental Assembly is arranging lodgings for the dentists who will come, and, if it is possible, one of the hotels in Madrid will be exclusively reserved for their accomodation. Those who desire rooms reserved will kindly communicate in advance to the secretary. On their arrival in Madrid the travellers will receive an illustrated guide of Madrid in Spanish or French. An office will be opened for the members of the Dental Assembly to supply all the information, they may needs and receive their mail, &c. English, French, and Spanish is spoken.

In the mornings of the three days that the Assembly will last, Clinics will be held at which the dentists will be able to give practical demonstrations. The president of the sub-committee is engaged in fitting up a place adapted to this object with operating chairs and other needed things. Papers will be accepted up to March 1st, and are specially asked for. As we have only just received these particulars, we presume the "Dental Assembly," at any rate, will extend this time somewhat. Further particulars can be obtained of the English Committee of the Congress, at Parkes' Museum, 74A, Margaret Street, W., or of Dr. Florestàn Aguilar, Secretary of the Spanish Odontological Society, Madrid.

THE SOUTHERN COUNTIES BRANCH of the British Dental Association has sent the following letter to its members, asking them to pass it on to medical friends:—"I, SILLWOOD ROAD, BRIGHTON,—Dear Sir,—I am directed by the Council of the above to ask your kind assistance in bringing forward for discussion at an early meeting of your Society the subject of the appended resolutions which have been passed by other Medical Societies. If your Society should see its way clear to come to a similar determination, and to deem it unprofessional for your members either to meet in consultation, recommend to their patients, or administer anæsthetics for : (1) Unregistered Practitioners of Dentistry ; (2) Dentists who Advertise ; our Association feels that that action would not only do much to help the best interests of the medical profession, but would also be of great assistance to the public in educating them to avoid those persons who are either illegally or uprofessionally practising dentistry. Yours truly, F. V. RICHARDSON, Hon. Secretary." The following are the appended resolutions:—Oxford and District Branch of the British Medical Association—"The members of this branch agree that they will not assist professionally, meet in consultation, or administer anæsthetics for members of the Dental profession who advertise." York Medical Society—"That this meeting (April 25, 1894), considers it unprofessional for registered medical practitioners to administer anæsthetics for unregistered dentists." Similar resolutions have also been passed by the Dundee and District Branch British Medical Association, and the Reading Pathological Society. Also, we may add, by the Nottingham

Medical Society; but we do not remember to have seen any report of a discussion on this subject by the Society of Anæsthetists, though it is a matter which concerns it most nearly.

AT the Annual Meeting of the Brighton, Hove and Preston Dental Hospital, Queen's Road, Brighton, Alderman Sir Joseph Ewart, M.D., who presided, was re-elected President for the ensuing year. He mentioned that the work of the Institution had been carried on with the usual success, and although the numbers had not increased to the same extent as in previous years, still the record showed that more patients had been received than in the preceding 12 months. The Balance-sheet showed a deficiency of £10 10s., due, probably, the Chairman remarked, to there having been no Hospital Saturday collection, which in the previous year had contributed £14 to the funds of the hospital.

A FEW months back we reprinted an article from the *International Dental Journal* in which Dr. Fillibrown stated that sometimes through the infundibulum there is a communication between the maxillary and the frontal sinuses. Dr. Milligan, in a paper read before the Manchester Medical Society, and published in the *Lancet*, shows that clinical experience confirms this important observation. He says:—"On several occasions I have found in mixed cases—by that I mean cases where both the frontal and the maxillary sinuses were the seat of suppurative catarrh and had been opened by way of treatment—that fluid syringed into the antrum came out at once through the opening in the forehead, and, *vice versâ*, that fluid syringed into the frontal sinus came out at once through the alveolar opening. This very intimate relation of the two cavities to one another, a fact not very generally recognised, may serve to explain why some cases of antral suppuration prove so resistant to treatment—viz., because there is a contributory flow of pus from an adjacent sinus, either the frontal or the fronto-ethmoidal, possibly in some cases the actual seat of origin of the antral disease, which must thus be regarded as a secondary complication, and not as the primary condition. In one case I have actually seen frontal sinus disease produced by a too vigorous syringing of the antral

cavity. In this case the patient syringed the antrum (through an alveolar opening) with such force that all at once he felt severe pains in the forehead. The pains become more intense, and the discharge from the nose much more copious than it had been, and when seen a few days afterwards the frontal sinus was found acutely inflamed and suppurating freely, although previously to this accident no frontal sinusitis existed."

THE action of a solution of gelatine as a coagulant of blood was discovered by Dastre and Floresco (Société de Biologie, February, 1896), and the application of this discovery to surgery is due to Carnot. Carnot dissolves the gelatine in normal salt solution (7 per cent. solution of Na. Cl. in water), using two strengths, a 5 per cent. solution for ordinary cases and a 10 per cent. one for hæmophiles, or very weakly patients. To sterilize these solutions they should be kept at boiling point for a quarter of an hour on two separate occasions at an interval of two days. Dr. Frey, writing in *l'Odontologie*, advises placing this gelatine mixture to melt over a sand bath during the earlier stages of the operation, and then to moisten a piece of lint in it and place it upon the wound. If there be a hæmorrhagic tendency, the lint, dipped in the stronger solution, is left in the wound for about six hours, otherwise it is removed in a few minutes. When many teeth are extracted under an anæsthetic, Dr. Frey states that this procedure is advisable, as it prevents blood being swallowed and so much of the subsequent nausea.

IN a fashionable quarter of Paris one "Alexis" does a roaring trade as a bone-setter and herbalist. To him one fine day there came a commissioner of police with an invitation to follow him to his office. The quack took the matter quite coolly, and, while preparing to obey the summons of the law, said to his servant, "Don't send any one away; I shall be back in a few minutes." The representative of civil power hinted with a significant smile that his return might possibly be a little delayed. On arriving at the police office "Alexis" asked the commissioner for a moment's private interview. This, after some demur, was granted. When they were alone "Alexis" took from his pocket a diploma of Doctor

of Medicine of the most authentic character, at the same time begging the astonished commissioner not to betray his secret, on the ground that he would lose all his practice if it were known that he was a regularly qualified doctor. He added, by way of explanation, that he had tried practice in the orthodox way, and had nearly starved behind his brass plate. An inspiration came to him to start as a quack. He removed his plate, dropped his surname and gave himself out for a bone-setter. At least, so says *The Practitioner*.

At the City Coroner's Court, Dale Street, Liverpool, on January 31st, Mr. T. E. Sampson held an inquest into the circumstances attending the death of William Parry, aged 23, an elementary school teacher, who lived at Arkles Lane, Anfield. The deceased was a young fellow of steady habits, who was never known to suffer from heart trouble. About three weeks ago he began to complain about toothache, and consulted a dentist, who told him that 19 teeth required extracting, and advised him to undergo an operation at the hands of Dr. H. Dubourg. The operation was arranged to take place on Saturday, January 29th, at 11 o'clock. Chloroform was administered, the deceased evidently being a fit subject. When the teeth had been extracted from the lower jaw the deceased showed signs of returning consciousness, and Dr. Dubourg administered chloroform a second time, and the deceased seemed to take it successfully. When the operation was almost completed, however, and when the deceased was in the act of rallying from the influence of the anæsthetic, he fainted, and the doctor applied artificial respiration. Dr. Thomas, of Rodney Street, and Dr. Pitt Taylor were sent for, and on their arrival every effort was put forward to resuscitate the patient, but without avail, and death ensued shortly after. Dr. Dubourg gave the cause of death as syncope, due to shock after the operation and the administration of chloroform. Dr. Dubourg added that this was the first out of some 400 similar operations which he had conducted where the consequences had proved fatal. The jury returned a verdict of "Death from misadventure."

At Newport Borough Police Court, on Monday, February 6th, before the Mayor, Alderman Bear and Mr. C. D. Phillips, Michael

Soloman, a young man trading as A. Simpson, of 26A, High Street, Newport, appeared to answer two summonses charging him with offences under the Dentists Act. Mr. Lyndon Moore, solicitor, appeared to support the summonses, and Mr. Frank Lewis, solicitor, represented the defendant. Mr. Moore stated that the defendant had inserted advertisements in the local papers in which he advertises his business as "Simpson's Dentorium." In January last Moses Gregory, miner, of Pontnewynydd, saw the defendant's advertisement and visited his establishment at Newport. There was a piano in the room, and Gregory and Solomon had a conversation as to music, and Solomon said that he had not been able to give much time to music, he having been so busy studying for his profession. Gregory entered into an agreement to take some teeth, and to pay four guineas for the same, and he paid 10s. on account. Subsequently Gregory, not being satisfied, visited the premises again, and asked defendant if he was a dentist, and defendant said that he was. Moses Gregory was called and bore out the opening statement. He was not satisfied with defendant because he was told that the defendant's mechanic had left, and only two boys were working upstairs. The original copy of an advertisement which appeared in the *South Wales Echo*, in which defendant advertised for a mechanic, was put in. The advertisement, which commenced with the word "Dentistry," was in defendant's handwriting. Mr. Lewis stated that defendant denied having told Gregory that he was a dentist. The Dentists Act did not prohibit any unregistered man from practising dentistry. He contended that the use of "dentorium" was not illegal, "dentorium," meaning a place for teeth. The Bench decided that the use of the word dentist was proved, and fined defendant £3 3s. and costs—£6 15s. in all. The summons for using the word "dentorium" was dismissed.

THE Annual Meeting in connection with the Victoria Dental Hospital, Manchester, was held on February 15th, at the Hospital, Mr. S. L. Helm presiding. The Honorary Secretary, Mr. G. W. Gray, read the Fourteenth Annual Report, in which the Committee of Management said that although the year had been uneventful the work of the Institution had been of a highly satisfactory character. The appointment of two additional gentlemen of great

experience as anæsthetists and the extension of this particular branch of the hospital work from three to six days a week had proved an incalculable boon to a large number of poor sufferers. Notwithstanding the great increase in the number of patients and operations since 1884, the Committee pointed out that no corresponding increase had taken place in the amount of the annual subscriptions, by which means only it was possible to carry on the arduous work of the hospital in a manner compatible alike with its importance and the needs of this great city. The balance due to the Treasurer amounted to £260 os. 4d., and the Committee earnestly appealed for the needful assistance to enable them to discharge this large debt, which so seriously hampered the utility of the Institution. The Dental Committee reported that the marked increase of work which took place during the previous year had been well maintained, and that there had been again a considerable increase in the number of operations. The facilities afforded patients of receiving anæsthetics daily instead of only on three days in the week had resulted in an increase of anæsthetic operations from 2,117 to 2,988. The large number of fillings inserted every year showed the value of the hospital in placing conservative operations within the reach of the poorest in the city. The summary of the work for the year showed that 7,057 adult and 3,131 children patients had been treated. Since the opening of the hospital to the 31st December, 1897, the total number of patients treated was 148,356. The Chairman, in moving the adoption of the Reports, pointed out that the Institution was both a hospital and school, and its work had continued to be large and useful. While the number of patients had been between 10,000 and 11,000, the operations had numbered over 15,000, and these would give an idea of the usefulness of the Institution. The school played a very important part there. At present they had about 20 students, which was, he believed, the largest number that had attended the school, and it was gratifying to know that many students who had been studying there had turned out well at examinations. He regretted that the public had not given greater support to the Institution. Mr. F. W. Travers seconded the adoption of the Reports, and the resolution was passed. On the motion of Mr. S. Oppenheim, seconded by Mr. W. Headridge, the meeting elected Messrs. W. A. Copinger, J. C. Waterhouse, T. Black and George W. Gray, members of the Committee of Management ;

Mr. F. W. Travers, Honorary Treasurer; Mr. Gray, Honorary Secretary; and Mr. Herbert Kidson, Honorary Auditor. A vote of thanks to the Committee, members of the staff, and officers during the year was heartily accorded. The meeting concluded with a vote of thanks to the Chairman for presiding, passed on the motion of Mr. G. C. Haworth, seconded by Mr. M. Cobe.

Abstracts and Selections.

THE ELECTRICAL TREATMENT OF TIC DOULOUREUX.

BERGONIE (*Arch. d'Elect. Méd.*, October 25th, 1897) tries to show, on the basis of 15 cases observed by himself and others, of which he gives full details, that electricity affords the best means of palliating, if not curing, tic douloureux, and at the same time states his views as to the best way in which to use it. Majendie employed galvanopuncture, while Duchenne preferred faradism, but the modern tendency is to use the continuous current. Bergonié recommends that this should be obtained from piles or accumulator, and not from electrical machines; that they should be of very high intensity—never less 35 and often over 50 milliamperes; and that the positive electrode should be applied to the seat of pain. This positive electrode should have an area of 200 to 250 square centimetres; the negative, about double the size, is applied over the spinal column, and each sitting should last at least 15 minutes, many exceeding half an hour. The author lays great stress on the employment of a rigid positive electrode accurately moulded to the face; the affected area is thus exactly covered, and the application of the current both direct and definitive. Bergonié is inclined to attribute the action of the current in these cases to its electrolytic rather than its electromotive properties. At the end of the application the skin of the affected region has not only lost its hypersensitiveness, but is almost, if not quite, anæsthetic, and the same applies to the deep parts, so that the muscular actions involved in speech, mastication, etc., no longer produce pain. The author's conclusions are as follows: (1) In the present state of the treatment of trigeminal neuralgia, galvanism with currents of high intensity and long duration is to be placed among the most efficacious remedies. (2) When this is

applied in the correct manner it is free from all inconvenience and, still more, from danger. (3) Its action is probably to be reckoned among the electrolytic effects of the current, and these may very likely reach the trunk and roots of the affected nerve, as well as its peripheral terminations.—*British Medical Journal*.

FORMALDEHYDE.

By H. C. WOODE, M.D., LL.D., Philadelphia, Pa.

THE gaseous body known as formaldehyde, formyl, or formol, has been sufficiently studied in the laboratory to indicate that it is a very valuable addition to our practical medicaments. Owing to the efforts of an enterprising firm of pharmaceutical chemists it is chiefly known by the profession as formalin. Formalin is, however, an aqueous 40 per cent. solution of formaldehyde, protected by a trade-mark name, and therefore loaded with all the excess of price, etc., which are of necessity associated with proprietary remedies. We know of no reason, however, why doctor or patient should pay this tax, and as the demand grows, various solutions of formaldehyde will probably be put upon the market. Indeed, under the name of formaldehyde, Merck & Co. to-day sell an aqueous solution at the rate of 75 cents a pound, including the bottle; the corresponding price of formalin being 85 cents a pound, also including package; so that by purchasing the solution of Merck there is a saving of over 12 per cent. For the purpose of calculation and production of strength, a 50 per cent. solution would be preferable; but it appears not to be permanent, becoming after a time turbid.

As long ago as 1888, Trillat discovered the germicidal powers of formaldehyde, and in a tabulated statement of the results obtained by numerous observers, Marion, in 1895, showed there was a widely founded consensus of opinion that one part in 20,000 of the gas would kill most bacteria if the contact were prolonged. Most observers agree in stating that the germicidal power of formaldehyde is equivalent to that of corrosive sublimate; but later reports (as those of Walter, made in 1896) indicate that while it is many times stronger than carbolic acid, it is inferior in strength to corrosive sublimate, and that a contact of one hour is necessary for the destruction of *all pathogenetic spores* by its 1 per cent. solution. A very important observation is that of Aronson and Burkhard,

according to whose experiments this substance is not merely germicidal, but has the power of stripping the toxins of diphtheria, of tetanus, and probably of other diseases of their poisonous powers.

The action of the drug upon the higher animals is comparatively feeble. Trillat states that 66 cubic centimetres of it per kilogramme are not fatal to the guinea-pig, although the urine passed by the poisoned animals is incapable of putrefaction; while no pronounced symptoms were produced in the rabbit by the injection of 38 centigrammes per kilogramme. According to Mosso and Paoletti, 50 cubic centimetres per kilogramme injected hypodermically into the dog caused a progressive poisoning, with fall of temperature and death after many days. The same amount given by the stomach produced rapid effects, with violent convulsions, general rigidity, salivation, stupor, unconsciousness, and death. A curious fact was noted, namely, that the drug was much more poisonous when taken by the stomach than when taken hypodermically. This is evidently connected with its intense irritant properties. It is probable that it causes a severe gastro-enteritis; and it is possible, especially as deep eschars have been noted following the hypodermic injections, that when it is injected into the cellular tissue the local effects may interfere with absorption. Small doses have been found by Mosso and Paoletti to increase the blood pressure, probably by causing peripheral contraction of the arteries, while the large doses depress the circulation, and so act upon the blood that it coagulates with the separation of a dark red serum.

The gas formaldehyde is exceedingly irritant, and it has been noted by Mosso and Paoletti that free inhalation is liable to produce severe pulmonary inflammation, ending, it may be, fatally.

Thus far formaldehyde has been used in practical medicine, chiefly, first, as a preservative; second, as a germicide and disinfectant. In the anatomical laboratory it has been largely employed, and is, we believe, highly considered by most anatomists. Dr. Holmes, the university anatomical demonstrator, informs us, however, that a 3 per cent. solution will not keep bodies unless they are completely immersed in it, parts floating above the liquid rapidly drying and being destroyed by mould; also that the brain in its interior softens and putrefies in such solution. According to Professor Orth, the addition of a 10 per cent. of a 40 per cent. solution of formaldehyde to 100 parts of Müller's solution greatly

increases the preserving and hardening action of that solution. As, however, the compound solution begins to decompose in two days after its mixing it must be made freshly at the time of using.

The chief interest to the general profession, however, of formaldehyde centres at present in its powers as a germicide and disinfectant, and it looks as though it would, for all ordinary purposes of the hospital and sick-room, replace other substances. Hitherto there has been no practical method known of disinfecting apartments. A peculiarity of the gas formaldehyde is its power of penetrating not only animal tissues, but almost all organic substances, so that Van Ermengen and Sugg, in 1895, demonstrated in an elaborate series of experiments that it is possible to sterilize books by means of formaldehyde in an approximate quantity of five cubic centimetres to one litre of air; while in our own University Laboratory, Horton, in 1896, showed that books infected with various pathogenetic germs could be disinfected by being shut up for fifteen minutes in an atmosphere containing the vapour of commercial formalin, one cubic centimetre of the formalin to 300 cubic centimetres or less of air. The method of Trillat, however, is without doubt greatly superior to evaporation or pulverization of the solution of formaldehyde. It consists in the use of the formaldehyde directly after its production by the passage of the vapors of methylic alcohol over red-hot metal. Employing a very ingenious apparatus devised by himself, Trillat proved that it was possible to completely disinfect rooms and the furniture contained therein by the consumption during six hours of from four to six litres of methylic alcohol for each 300 cubic metres of the room.

In the very recent (January, 1897) report of an elaborate series of experiments, Dr. J. J. Kinyoun, of the United States Marine Service, has confirmed all the statements of Trillat; and has further shown that none of the ordinary fabrics are injured by the gas, which is entirely capable of completely disinfecting curtains, carpets, clothing, bed-covering, and the minor forms of furniture, although it is doubtful whether heavy upholstered furniture, such as sofas and mattresses, can in their interior be thoroughly disinfected. Nevertheless, he did succeed in killing germs underneath 10 layers of blankets.

There is at present offered for sale in the markets of the United States several forms of formaldehyde lamps, which, we believe, are

all adaptations of the Trillat system, and are probably all of them efficient. We have known influenza apparently put an end to in a house where cases were continually recurring by its use, and the time seems not far distant when some such apparatus will be owned by every physician and used always in private practice where there has been germ-disease. The formaldehyde is so irritating that no one can stay in the room during the disinfection ; but the apparatus is automatic and can be left to itself. Rooms can undoubtedly be disinfected by pulverizing in them with steam atomizers formalin or other solution of formaldehyde. There is, however, no reason for believing that the results obtained with formalin are better than those obtained with the gas formaldehyde ; probably they are not as good. The expense with formalin is very many times greater than with formaldehyde. Thirty-two grainmes of methylic alcohol theoretically should yield 30 grammes of liquid formaldehyde, as that compound exists under the influence of intense cold or under pressure. This amount of the liquid formaldehyde at ordinary pressure and a temperature of 60° F. should make 23.4 litres of the gas formaldehyde, the form in which the substance usually exists. Calculating this out, it will be found that one pound of methylic alcohol should yield 355 litres of formaldehyde gas, or about 400 quarts, or about 100 gallons. As pure methylic alcohol is listed by Merck at one dollar and nine cents a pound, theoretically, there should be obtained for one dollar nine cents as much of the vapour as exists in 250 gallons of formalin, a substance listed at 85 cents a pound. Even supposing that 30 per cent. of the methylic alcohol is wasted in the practical making of the formaldehyde, it is plain that the cost of the vapour is many times less than of a corresponding amount of formalin.

Formaldehyde has not as yet been fully tested in practical surgery, but there is sufficient knowledge to indicate that it may prove to be the best of the known germicides. The taste of it and the irritant quality of the solution, along with the feebleness of its toxic properties, make serious accidental poisoning by it very improbable ; and also make still more improbable, practically impossible, any fatal results parallel to those which have been so frequently produced by the surgeon when by the too free use of corrosive sublimate or of carbolic acid he has caused the death of the unfortunate patient, a result, in our opinion, which has been far more frequent than is generally admitted.

It would appear also that formalin is not only a germicide, but will so act upon various organic materials as to remove bad odours ; at least, according to Walter, a 1 per cent. solution will almost immediately and entirely deodorize fæces. For the cleansing of vessels in the anatomical laboratory the one half per cent. solution of formaldehyde suffices, but for most purposes in the clinical amphitheatre the 1 per cent. solution may be used. According to Walter, washing the hands with it and afterwards with alcohol renders them completely antiseptic, while it does not stain and appears not to irritate more than the other antiseptic solutions used. It is stated that it does not in any way affect instruments, so that its use is superior to the method of boiling as commonly practised, because it leaves the edges of the knives undulled. We are also informed by surgeons that it affords a very efficient means of preparing catgut.

It seems to us probable that by the use of the gas itself many of the tedious procedures at present connected with heating in the preparation of surgical dressings may be avoided. All that would probably be necessary to do would be to connect the nozzle of a formaldehyde-forming lamp with the copper or tin vessel containing the dressings, so as to allow a current of the vapour to pass freely through in order to completely sterilize the dressing. Experiments are necessary, however, to show how far what seems probable *à priori* would endure in practice.

There appears to be little doubt as to the great value of formaldehyde as a local application, although its full powers have as yet been scarcely made out, while there appears to be no danger of poisoning by it, although its solution, if used too strong, is liable to produce excessive irritation of the sound tissues. In the University Hospital, as well as in the Presbyterian Hospital and in private practice, Professor Willard has used formaldehyde in all sorts of wounds, in carbuncles and in various infected sores. For washing out and purifying an infected wound he employs a 2 per cent. solution. For a continuous local application, or for free irrigation, a quarter of the 1 per cent. solution ; and while the effects upon suppuration and the general evidences of infection have been very pronounced, in no case has there been any local irritation. Professor von Winckel, of Berlin, reported to the Gynæcological Society of that city that he had found the agent extremely effective

in gonorrhœal vaginitis and other infective diseases of the female genitals; and that while a 4 per cent. solution of formaldehyde could often be painted with great and immediate advantage upon the cervix or other diseased part, 1 part in 10,000 is effective by the method of irrigation. It is very probable that strong solutions of formaldehyde will be found to be a very valuable remedy in the treatment of chancroids, poisoned wounds, &c. Of course, these strong solutions should be used at first tentatively, and always as though they were mild caustics.

A suggestion, which we throw out for the testing of surgeons, is whether it be not possible, by means of the simple formaldehyde lamp, to immediately disinfect wounds by allowing the vapours of the formaldehyde to be discharged for a few moments into the wound. The penetrating character of these vapours is such that *à priori*, at least, it appears probable that they would penetrate into the recesses of the wound much better than would a liquid solution. In bad cases of peritonitis, with the whole abdominal surfaces infected, it is notorious that laparotomy, although frequently practised, is almost invariably followed by death; but here, again, the possibilities of rapid disinfection and purification by means of the gaseous and seemingly scarcely toxic vapour appear to open out a possible avenue of safety. The momentary irritation of the peritoneum would probably not be severe enough to create serious shock; while our present knowledge indicates that it would interfere with rather than increase septic absorption.—*University Medical Magazine*.

FORMALDEHYDE IN SOLID FORM.

By WILLIAM ROLLINS, Boston, Mass.

IF we make a very strong aqueous solution of this gas, part of it slowly assumes the solid form and is precipitated. When this is dried and the pulp-chamber in a tooth filled with it, after a time it is all reconverted into a gas and thoroughly disinfects the whole tooth. If there is an abscess at the root, by sealing in the solid formaldehyde with cement most of the gas escapes through the abscess, which soon yields to the treatment, which should be renewed every three days as long as required. An extended use has shown me the value of this treatment.—*International*.

THE METALS USED BY THE GREAT NATIONS OF ANTIQUITY.*

BY DR. J. H. GLADSTONE.

AT the beginning of the present century, the lecturer said, little was known of the metals used by the ancients, except through the classic poets and Jewish history. Since then excavations have been made that have added much to our knowledge of the subject. Languages previously unknown have been brought to light, inscriptions telling the histories of extinct races have become explained, and, what is more important, the articles themselves have been preserved. Many have taken part in the investigations ; some have followed architecture, others sculpture, and others painting, but what had interested the lecturer most was the metals in use in these almost prehistoric times. The material for discussion was very great, and it would be difficult to know what to take up and what to leave out in an hour's lecture. The countries dealt with were those lying around the East of the Mediterranean—Egypt, Assyria, Palestine and Greece being the most important—during the time from the reign of the first Pharaoh, Menes, about 4400 B.C., down to Alexander the Great. Dealing with these four in order, the lecturer first called the attention of the audience to a diagram of the hieroglyphic inscriptions on a tablet of Seneferu, which dates from nearly 3800 B.C. The tablet represents the conquest of the copper mines at Wady Magharah, and in it was represented a battle-axe, corresponding closely with a specimen on the lecture table. Explaining the hieroglyphics, the lecturer pointed out that the symbol of an axe-head represented copper or bronze. It followed, therefore, that hieroglyphics were invented before this. Since beginning the preparation of the lecture, Dr. Gladstone had fortunately been supplied with history going back to about 700 years before this. At Nagada a large tomb had been discovered, probably that of the Pharaoh Menes, containing, besides objects of ivory and precious stones, two articles of copper, and one of gold. The French chemist, Berthelot, who has interested himself in this subject, and whose name is familiar in political as well as scientific circles, has analysed these, and finds the copper to be free from arsenic and tin. These articles must take the place of honour

* A Lecture delivered at the Royal Institution.

as being the oldest pieces of metal belonging to a date known with certainty, but a harpoon for taking the fishes of the Nile, found at Nagada, if not older, must belong to a period very little later. The gold of the Egyptians of this period contains silver, and was probably obtained from Asia Minor, but later they obtained gold from Nubia. The lecture was plentifully illustrated with lantern slides. Some of these were now exhibited, showing drawings taken from the tombs, in which various operations in metallic industry were depicted. One showed the weighing of quantities while a scribe wrote down the amounts. In another a man was using a mouth blow-pipe with a furnace, while a third represented a bazaar, where one party was bargaining for a necklace, and another for some fish-hooks. Some gold and jewelled necklaces belonging to a period about 1700 B.C. are stated to be scarcely matched in fineness of work at the present day. Copper was employed largely for implements, at this time replacing the older flints. It, of course, had the disadvantage in the pure state of being soft, and it is interesting to note the advances made in hardening it. Hammering and alloying with arsenic or tin were employed. It is not known where this tin was obtained, but it is more probable that it came from the neighbourhood of Etruria than from the British Isles. Tin can at once be detected in the metals by the muddy solution obtained when they are touched with nitric acid. Zinc was not used by the Egyptians, but its use in making brass is first found in the writings of Aristotle. A number of interesting specimens were shown, most of the copper articles being deeply penetrated by a peculiar corrosion, forming the red suboxide. Among them were a knife that had been moulded to shape but left unfinished, a knife covered with silver, and one that had lost its wooden handle but retained the ivory collar. A steelyard and some razors were also preserved. A spear-head, lent by Sir John Evans, bore an inscription showing that its date was about 2300 B.C. Lead was known by the Egyptians, but found no employment. A ring of tin and beads of antimony showed that these metals were also known. The latter was also known in Assyria, but was forgotten and re-discovered in later times. The question as to when iron was first known is a difficult one, but there is no evidence of its use till the time of Rameses II. The lecturer then dealt with Assyria. The Assyrians, like the Egyptians, had a fondness for writing down their history. Among some copper

figures at Tello, belonging to a date of 2700 B.C., is a colossal sphere. At Tdl-el-Sifr, 1500 B.C., was found a whole coppersmith's shop. In the earlier times of this empire they did not value metals greatly, but later, when they made such terrible campaigns against their neighbours, they prized them highly. A number of illustrations were thrown on the screen showing the tribute brought to Shalmaneser II. Vessels and goblets of silver and gold appeared to be abundant. One of the gates of this king's palace was built of wood bound up with brass. Passing on to Palestine, Dr. Gladstone stated that we first hear of it when in the hands of the Hittites. Their writings cannot yet be read, but there exists plenty of them, and probably they will soon be understood. The first date known accurately is that of the battle of Megiddo, about 1600 B.C., and an account of the tribute paid on that occasion remains. Exodus never mentions iron, while it does gold and silver often; if iron had been known at that time, it would almost certainly have been referred to in the instructions for building the tabernacle. At a later time the Hebrews were amazed at the wealth of some of their neighbours because they possessed iron. For want of time the account of Greece was hurriedly passed over, reference being made to Homer's descriptions, among which was that of Achilles' shield, "which was of gold, silver, copper, and tin, not alloyed, but hammered in layers at the forge of Vulcan." Iron appears only as a precious metal. Lantern-slides were used to illustrate the articles possessed, among which were vessels of various kinds in copper, bronze, silver and gold, also ornaments, and a remarkable figure of a heifer's head in silver with gilded horns that tallies closely with the description given by Homer. Some cups of gold bore well-executed designs of quiet pastoral scenes contrasted with pictures of the violent behaviour of wild animals. In conclusion, it was pointed out what inference could be drawn from these facts as to the intercourse between the nations of that time. Copper was obtained from Arabia and from Cyprus, which island gave its name to the metal in many languages. Gold came from Asia Minor and Nubia, silver from Spain, lead from Sardinia. The Phœnician merchants travelled not only by sea but also by land, visiting Scandinavia, India, and Britain, bartering and introducing tools. They did not visit Britain, however, in the copper period, but only after bronze became established.—*Pharmaceutical Journal*.

A CASE OF PRIMARY FATAL HEMORRHAGE AFTER THE REMOVAL OF ADENOID GROWTHS.

E. SCHMIEGELOW (*Monatsschr. f. Ohrenheilk.*, 1897, *xxxi*, 115). These are cases very rare, the hemorrhage being usually controlled before the catastrophe takes place. The case reported by Bryson Delavan, where a child died merely from a digital exploration of the post-nasal space, is to be explained by the fact that the child was suffering from hemophilia. Thomas French is aware of only two other cases in America, where death resulted from hemorrhage following the removal of adenoid vegetations. The following case is reported by Schmiegelow :

E. F. Monti, 12 years old, presented himself at the Poliklinik of the *Friedrichsspital* in Copenhagen, on September 23, 1895, accompanied only by his sister. The patient complained of difficulty in breathing through the nose. He was small for his age, was a mouth breather, and the nose was compressed. On both sides of the neck, in front as well as behind the sternomastoideus, there were present numerous enlarged glands. The patient's aspect was scrofulous. A digital examination of the cavum pharyngonasale proves it, as well as the choanæ posterior, to be filled with adenoids. The finger used for the purpose of exploration was withdrawn slightly tinged with blood. An assistant seated the patient in his lap, supporting the latter's head with one hand and grasping the child's hands with the other. The patient was not excited, and remained quietly seated during the whole operation, offering no resistance. One of Gottstein's curettes, held like a penholder, was passed back into the naso-pharynx. First, a few strokes were made in the median line, followed by directing the handle of the instrument to the left, which brought the cutting part of the instrument to the right side of the nasopharyngeal cavity, where 3-4 scrapings were made. Suddenly a very profuse hemorrhage of bright arterial blood took place from nose and mouth, no force having been used with the instrument. As it was seen at once that great danger threatened, assistance was quickly summoned. The patient was placed on a table and a tampon of iodoform gauze at once applied, anteriorly and posteriorly. The patient gasped for breath, but was extremely pale and cyanotic. The hemorrhage ceased as soon as the tampon was applied, but respiration could not be induced in spite of subcutaneous and intravenous injections of salt water. The whole

scene passed very rapidly, the blood gushed in a thick stream twice or three times from mouth and nose and then the patient collapsed. The loss of blood amounted probably to 500 g.

Autopsy showed that the right lateral wall of the nasopharyngeal cavity was to a great extent injured, and the remnants of the bleeding were found in the ruptured tissue. The internal carotid presented an irregular rupture, situated just anterior to its entrance into the carotoid canal of the petrous portion; but *there was no lesion of the vessel at the spot corresponding to the injury of the walls of the pharynx*. Numerous glands were noticed behind the sheath of the vessel. The wall of the vessel was microscopically normal.—*Pediatrics*.

THE DIFFUSIBILITY OF COAGULANTS IN DENTISTRY.

By E. LAWLEY YORK, D.D.S., Chicago.

THESE experiments were made in various ways to show that carbolic acid will diffuse through dentine, in freshly extracted teeth that at the time of the extraction were normal, also in teeth freshly extracted that had putrescent pulp-canals. In the latter I found that there was slightly more rapidity of diffusion.

After opening into the pulp-chamber from the lingual or coronal aspect, according to the tooth that I was treating, and after gaining sufficient room to pass a hypodermic needle into the pulp-chamber, thus avoiding cutting away the tooth-structure unnecessarily, I removed the pulp, dried the canal or canals, as the case might be, and sealed the foramen at the apex with gutta-percha. I then injected a small quantity of a 95 per cent. solution of carbolic acid, which had been previously coloured with a minute quantity of fuchsin sufficient to fill the pulp chamber and about two-thirds of the canal, thus avoiding any oozing out upon sealing the crown with gutta-percha. I then wrapped the teeth in wet gauze and placed them in a receptacle I had made that would keep them at about 98° F. My aim through my experiments has been to make them as nearly as possible under the same conditions that are met with in the mouth. The earlier experiments were generally with teeth left in the incubator 24 hours at least, but later I found that carbolic acid would pass through the dentine as far as the cementum in 18½ hours.

On taking them out of the incubator I made cross sections to preserve the bulk of the tooth for reference. In making a longitudinal section the tooth would be spoiled and only the section left, so that I should not have been able to show you the remaining portion from which the section was made. These were all mounted in Canada balsam, and show that the coloured carbolic acid has passed entirely through the dentine.

The next series of experiments consisted in placing in the canals and pulp-chamber as much carbolic acid as would be used in the ordinary treatment of a tooth. After sealing the teeth, I placed them in a bag that was tied to the nozzle of a faucet, and water was allowed to flow over them for two or three hours. The cementum was then ground off on two sides of the root, washed again, and the teeth suspended in water nearly up to their anatomical necks. The earlier ones I usually left 24 hours, but later I found that $18\frac{1}{2}$ hours were sufficient time to detect carbolic acid in the water with the bromin water test.

In some cases I coated the whole of the tooth with sandarac varnish, to prevent the possibility of any carbolic acid coming in contact with the tooth structure. Out of the many hundred tests made I did not fail in a single case to detect carbolic acid in the water.

Later on, at the suggestion of Dr. P. J. Kester, I selected sound teeth whenever I could, and opened from the apex, slightly enlarging the foramen, and passing the carbolic acid in this way into the pulp chamber, then sealing and coating with sandarac varnish, washing, &c. I suspended the tooth in water, crown down, thus excluding any possibility of leakage. The results are just the same: carbolic acid in the water.

The following experiment was intended to demonstrate that carbolic acid does not form an impenetrable coagulum at the orificial end of the dentinal tubuli, with their albuminoid contents. A tooth was taken that had contained a 95 per cent. solution of carbolic acid in the pulp chamber and canal for 70 hours. The canal was dried, and a saturated solution of sodium chlorid was inserted by means of a hypodermic syringe. The end was sealed with gutta-percha and then coated with sandarac varnish. This was allowed to dry, after which it was washed one hour with water. The tooth, which had been opened only at the apex, was suspended in water, crown down, about two-thirds of its length being immersed. In three

hours I tested the water with a drop of 25 per cent. solution of argent. nitras, which resulted in large quantities of the chloride of silver being thrown down, thus proving beyond all doubt that the coagulum formed by carbolic acid is not a barrier to the passage of other substances through the dentine, as has been so often stated.

Test for Diffusion in Coagulated Albumen.—I took a hard-boiled egg, sawed off one end, carefully removed first the yolk and then the remainder of the shell, placing the rest in a small wine glass containing about one and one-half teaspoonfuls of water. I then poured into the space previously occupied by the yolk some carbolic acid. This was left for 24 hours, with the assurance from those who saw it that carbolic acid would never penetrate it. When I tested the water it was so loaded with carbolic acid that I had to pour it into a larger vessel to accommodate the quantity of bromin water required. The next time I made this test I found carbolic acid would pass through in two hours.

A pulp which is in a congested or hyperæmic condition, as the result of blows, exposure, thermometrical changes, ingress of micro-organisms, &c., is especially liable to disturbances resulting from blood stasis owing to vessels both entering and leaving the same narrow foramen. The pulp is consequently in all probability subject to strangulation or stasis. The changes that now take place are not chiefly inflammatory, but necrotic, followed by secondary decomposition and putrefaction.

Here we have to do with the death of tissue occurring under special conditions, and resulting in the formation of coagulated albuminoids; but the coagulation takes place not in a liquid, but in the substance of formed tissue elements in cells and cellular or intercellular structures. If by reason of arrested nutrition, or by the action of chemical or thermal agencies, a definite segment of an organ undergoes death, this gives rise to coagulation within the tissue for the reason that the lymph contains fibrinogen, the cells contain fibrinoplastin, and from these substances fibrin is produced. Hence Cohnheim introduced the words "coagulation necrosis" to describe this special form of local death—viz., necrosis with fibrin formation. Coagulation necrosis may also be found combined with other retrogressive changes, as fatty degeneration. What we are in the habit of speaking of as ulceration is not true ulceration in a pathological sense, but, in its incipency, at least, coagulation necrosis.

With this array of facts staring us in the face, what course of treatment are we to pursue? Nature is forming a coagulum. Should we not attempt to assist her by hurrying artificially those changes which she will in time produce spontaneously?

The cause, in my opinion, of so-called lame teeth—and it is also the clinical experience of a large majority of the best men in the profession—is imperfect root-filling, not the use of coagulants. We so often see pulpless teeth in the mouths of our patients, without any root-filling, when the whole crown is decayed away, and the pulp chamber and canals are reeking with purulent matter. The patient will reply, upon inquiry, that the tooth has never given any inconvenience. This condition can only be accounted for in one way—namely, that the foramen is obliterated or closed (encysted, if you like); consequently none of the septic matter can pass through the foramen and set up irritation and consequent inflammation of the peridental membrane. I do not think there ever was a so-called lame tooth caused by the septic matter contained in the canal or canals of a tooth passing through the dentin and cementum and setting up irritation and inflammation of the peridental membrane. It must pass through the apical foramen to cause such a condition.

Dr. Harlan, in a paper read before the Iowa Dental Society, says: "Carbolic acid melted was introduced into the pulp chamber very carefully to avoid getting any of the acid in the crowns or on the outside of them. After the lapse of 24 or 48 hours, respectively, iodine tincture was introduced in the same manner as first described above. If the iodine penetrated the dentin, it would pass through the cementum and turn the starch blue. It did not penetrate, hence no blue stain. Iodine is soluble in carbolic acid; carbolic acid is soluble in alcohol; both are coagulants. Carbolic acid is sparingly soluble in water; iodine is soluble in water, 1 to 7,000 parts. This is one of the best experiments that could be used as a test for diffusion." Another series of experiments was made with the tincture of iodine alone. The results were negative.

To test the value of this experiment I ground a tooth and placed it in a bottle containing water. I took a small quantity, to which was added a drop of Lugol's solution of iodine. A few drops of the mixture were tested with dilute starch paste, with no consequent reaction. This was precisely the same test that Dr. Harlan made, with the exception that the teeth in his case were intact. The reason there was no reaction was that the tincture of iodine combined with the salts of the tooth and formed iodides of the base, with which it united, leaving no free iodine. Consequently we could not get the reaction of the iodine. Control test for the above. The same starch paste, with one-tenth the quantity of iodine and water, gave the blue iodide of starch very distinctly.—*Dental Review*.

THE DENTAL RECORD.

VOL. XVIII.

APRIL 1ST, 1898.

No. 4.

Original Communications.

A METHOD OF PROLONGING NITROUS OXIDE ANÆSTHESIA IN DENTAL PRACTICE.

By HARVEY HILLIARD, M.R.C.S.Eng., L.R.C.P.Lond.,
Assistant Anæsthetist to the Dental Hospital of London.

ANÆSTHETISTS are agreed that nitrous oxide would be a perfect anæsthetic for dental procedures but for the brevity, after the removal of the face-piece, of the available anæsthesia produced by its inhalation. Hitherto, therefore, only operations of the shortest duration could be attempted where nitrous oxide has been employed, while in those cases requiring an anæsthesia of two or three minutes' duration, the nitrous oxide has to be, in the vast majority of cases, supplemented with the use of ether. Since, however, ether is so liable to be followed by unpleasant after effects, so pungent in odour that it clings about the operator's room all day, and since so much preparation of the patient is necessary before the drug can be administered, it is often deemed advisable to perform the operation at the patient's own house in order to minimise these many disadvantages. With nitrous oxide, however, we have practically none of these drawbacks ; after effects, if present, are of such a transient nature that a patient can walk home comfortably within a few minutes of the administration ; the gas is without odour and is not unpleasant to inhale, and, moreover, little or no preparation is necessary prior to its inhalation. It is obvious, therefore, that if an anæsthesia of several minutes' duration, after the removal of the face-piece, can be obtained with nitrous oxide, by whatever means, this agent will be used with increasing frequency, and that it will only be supplemented in those cases where an unusually prolonged narcosis is required, as, for instance, in extensive immediate torsions, regulations, and multiple extractions.

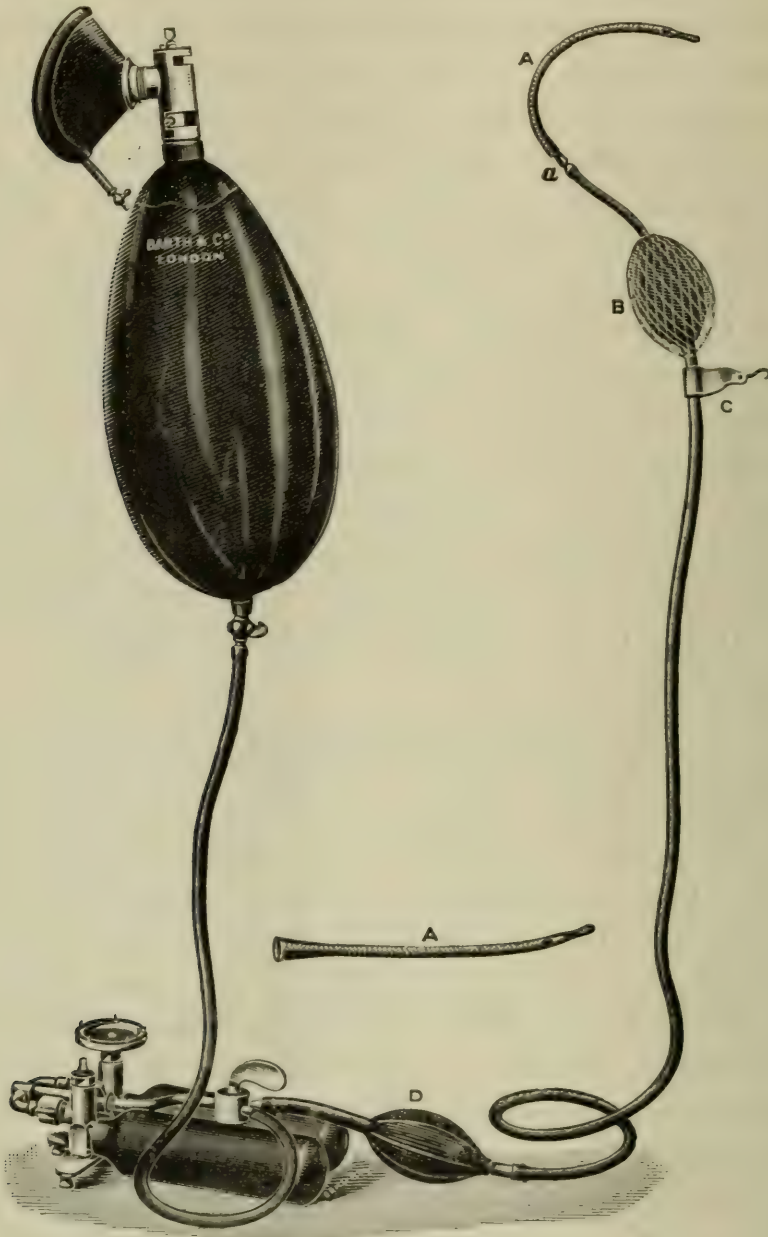
Up to the present time the means adopted for prolonging the anæsthetic effect of nitrous oxide have been very imperfect, being based, for the most part, upon the principle of preventing the elimination of the gas, thereby obtaining merely a slightly prolonged anæsthesia ; but by preventing this elimination we must prevent or impede respiration also ; such methods, for instance, as pushing backward the lower jaw together with the tongue, thereby closing the orifice of the larynx ; or by passing a sponge upon a holder backwards and downwards into the pharynx, produce very marked congestion and cyanosis, with jactitation, in fact, the signs of impending asphyxia. The patient, under these circumstances, is in a dangerous condition ; there is great engorgement of the venous system and right side of the heart, and should there be present any degree of valvular cardiac disease, the heart muscle might be unable to cope with the extra strain thrown upon it, and the administration possibly terminate fatally. In almost every reported case of death occurring during the exhibition of nitrous oxide, it has resulted from obstructed respiration and consequent asphyxia ; we are always very careful, therefore, when administering the gas to patients suffering from valvular disease of the heart, not only to ensure perfect freedom of respiration, but also to allow a due admixture of air or oxygen, in order that all jactitation, cyanosis, and cardiac engorgement may be avoided. There is also another grave objection to this mode of prolonging nitrous oxide anæsthesia by preventing elimination, for as we pointed out above, it produces much congestion and cyanosis, and this relieves itself locally by increased hæmorrhage from the gums and empty tooth sockets, so that the patient's mouth rapidly fills with blood, whereby the operator is much hampered or even forced to abandon the operation, as there is not sufficient time for systematic sponging. Further, unless the patient's head be kept in such a position that the lower jaw and floor of the mouth form a sort of reservoir for the collection of this blood, it will gravitate backwards, and at the first inspiration (which is always of unusual depth) it will probably be sucked into the air passages, necessitating immediate tracheotomy to save the patient's life. It should always be our aim, therefore, to maintain the patient's head in the most convenient position for the operator consistent with the safety of the patient ; but where the above methods are adopted, the operator has to work in an unfavourable position and thus the ultimate gain in time is

practically of no value owing to the increased difficulties of the extractions.

The late Mr. Clover, aware of the advantages of obtaining a prolonged anæsthesia with nitrous oxide in dental surgery, made experiments with a "nose-piece," by means of which he hoped to continue the administration of gas and thus prolong its anæsthetic action during operations on the mouth after the ordinary face-piece had been removed. To this end, when the patient was fully anæsthetised, he fitted over the nose a small accessory inhaler to which nitrous oxide was supplied by means of a stopcock and tube communicating with a gasometer. He expected that sufficient gas would be inspired through the nose to maintain an anæsthesia already produced by the ordinary method, and thus enable the surgeon to undertake longer operations upon the jaws than could otherwise have been attempted, except under the influence of ether. The results did not prove sufficiently satisfactory and Mr. Clover abandoned the idea. The apparatus was difficult to keep properly adjusted: so much air was breathed through the mouth that the anæsthesia was uncertain, and finally the gas could not be supplied at sufficient pressure to obviate this evil without being likely to cause damage to the olfactory region, the frontal or even the maxillary sinuses.

Having found that prolonged administration of nitrous oxide for ordinary surgical procedures was attended with the best results, I attempted to devise a method whereby this anæsthetic could be employed in extensive operations in dental surgery, and soon discovered that the only channel for the convenient administration of the gas, after the removal of the face-piece was by means of a tube passed along the inferior meatus of the nose. First a small sized celluloid female catheter seemed the most suitable instrument for this purpose, but this was discarded owing to its rigidity, for a surprisingly large number of patients are found to have a deviated nasal septum, an unusually arched palate, causing a corresponding curve of the floor of the inferior meatus, or much depressed inferior turbinated bones covered with hypertrophied mucosa, which would be considerably damaged by forcible passage beneath them of a rigid instrument. Next a No. 7 (English) soft rubber male catheter was tried and answered admirably, except that it takes longer to pass and is liable to be blown out by the pressure of gas supplied through it, combined with the patient's expiratory efforts, and also

on account of its flexibility it is more difficult to keep out of the operator's way without kinking. Lastly, a soft gum elastic silk tube was employed "A" (see diagram); this tube is equal in diameter to No. 7 catheter, it is six inches in length and its distal end is made like an *à boule* male catheter, and is solid



A.—Nasal tube; *a* Vulcanite nozzle.

B.—Netted bag.

C.—Hook for fixing to head-piece of dental chair.

D.—Expansion bag.

up to the orifice, which is situated half an inch from the point, the proximal end being expanded to receive the conical attachment of tubing, in connection with the portable steel

cylinders, in which the gas is usually stored. Two of these cylinders are connected up in the usual manner and fitted with a stopcock, which has been made to my design by Messrs. Barth and Co. It is a tube of inlet to stopcock chamber which is screwed into the cylinder connection and lies in the space between the cylinders so as to be out of the way, this chamber is fitted with a two-way stopcock, the tap of which is an elongated broad arm so that it can be easily turned by the foot. From the chamber lead two tubes of exit. The tap is so arranged that when it is turned on to either of the two exit tubes, the arm lies over that tube through which the gas will flow when liberated from the cylinders by means of the ordinary foot-key. The whole gas supply can thus be entirely controlled by the administrator's foot. The exit tubes, like the other parts of the stopcock, are made of brass, are placed at an angle and are an inch long, with bulbous ends, so that rubber tubing can be easily slipped over them. To one is attached a Dr. Hewitt's gas inhaling apparatus, to the other the connections of the nasal tube, which consists of the following:—A small stout rubber "expansion" bag "*D*," intended to regulate the usually irregular flow of gas from the cylinders: this is fixed by one end to a stopcock, exit the other extremity being connected by tubing to a thinner and large rubber bag covered with netting "*B*," which is continued as a small tube bearing a conical vulcanite nozzle "*a*," fitting into the funnel-shaped extremity of the nasal tube proper (*see diagram*.) This second bag is fixed by a hook to the headpiece of the dental chair "*C*," and by noticing its degree of expansion the anæsthetist is enabled to tell whether his patient is getting a sufficient supply of gas to maintain anæsthesia.

The administration is conducted in the usual way until the patient has lost consciousness, then taking the precaution that the ordinary gas bag is full, the stopcock having been turned on to it, and choosing the end of an inspiration, the face-piece is removed, the nasal tube rapidly passed (this can be done during a single expiration), the face-piece reapplied and the stopcock turned, so that the gas now only flows through the nasal tube; at this stage the inhalation is continued by both nasal tube and face-piece up to full anæsthesia; the face-piece is now finally removed, the operation begun and narcosis maintained by the nasal tube alone. To prevent the return of consciousness the "netted bag" must be kept fully distended, the gas being supplied at considerable pressure.

In a typical case the patient is but slightly cyanosed, there is little or no jactitation (as he inhales sufficient air through the mouth and free nostril), but the conjunctival reflex is absent. Should, however, he be of the type that require but little gas, or if for any reason the mouth be considerably obstructed, either by sponges or the operator's hand, the nasal septum being at the same time markedly deviated towards the free nostril, the intake of air in proportion to the intake of gas is so lessened that deep cyanosis, jactitation, and even opisthotonos are produced.

If, on the other hand, more gas is necessary to maintain anæsthesia, the free nostril can be closed by the anæsthetist's finger or even the mouth can be partially obstructed by inserting a sponge. The extremity of the nasal tube is made to impinge on the posterior pharyngeal wall in order that the flow of gas may be directed, by means of the orifice in its under aspect, immediately over the upper opening of the larynx. Therefore, great care must be taken not to permit a very free supply of gas from the cylinder, as by so doing an over-dose would be easily administered.

With this apparatus I have succeeded in keeping patients fully anæsthetised for operations lasting three minutes after the removal of the face-piece, and have only then discontinued the administration because the operation has by that time been completed and not because the anæsthesia could not be further maintained by this method.

The tube has been employed in over one hundred cases, in two of which the operation of tapping and draining the antrum of Highmore was performed, and in one immediate torsion was exerted upon a lateral incisor tooth. But in a series of 30 consecutive cases of both sexes for tooth extraction of which I have made notes the average period of anæsthesia was roughly one minute 40 seconds. These cases were chosen as suitable ones for the employment of the tube, on account of the necessary extractions being very numerous or appearing to be of unusual difficulty, and in only one case had the operation to be curtailed; in this one case the hæmorrhage from the gums was so profuse that, on this account, after 12 extractions, the operation had to be stopped, as no sponges were at hand; the anæsthesia in this case was two and a half minutes.

The tube is easily kept out of the operator's way by being slipped over and behind the patient's ear. There is no fear of conveying sepsis for the tube can be sterilised with the greatest ease, and in

hospital practice I am in the habit of employing two, which are used alternately, so that one can be soaking in warm antiseptic solution while the other is in actual use. The nostril, on the same side as that on which the anæsthetist stands, is the more convenient for the passage of the tube, but as the nasal septum is not unfrequently deviated to this side, one is compelled occasionally to pass the tube along the opposite nostril.

The only absolute contra-indications to its use are marked hypertrophy of the nasal mucosa or adenoid growths in the naso-pharynx, in either of which cases troublesome hæmorrhage would result from injury to these tissues.

Great care must be exercised in passing the tube so that it can be felt to impinge on the posterior pharyngeal wall, as it is easy to pass it too far, and so inflate the œsophagus and set up swallowing movements and vomiting. Even where due caution is practised, vomiting seems to be less uncommon than in ordinary nitrous oxide anæsthesia, and for this reason patients should be recommended to abstain from food for two hours before the administration. If this precaution be taken and one is careful also that the patient swallows no blood, unpleasant after effects will be very rarely met with.

In conclusion I claim for this apparatus that it will render the employment of ether unnecessary in dental surgery, that owing to its small bulk and great portability it is more convenient, and economical—as regards the quantity of nitrous oxide used—than any other apparatus employed with the same object; and finally in skilled hands it is free from the risk of damage to the nose, naso-pharynx and mouth, and is without danger to the patient.

STRAY THOUGHTS.*

By T. MANSELL, L.D.S.Eng.

MR. PRESIDENT AND GENTLEMEN,—In casting round for a subject on which to read a paper before this Society, and one that should contain some original matter, I could not help feeling deeply my shortcomings in respect to any originality, and these I fear are due in a great measure to want of ability, and perhaps in some degree to want of time. Whilst turning over in my mind a number

* A Paper read before the Liverpool Odontological Society.

of subjects which have been, still are, and will continue to be of interest and importance to dental practitioners, I feel that in each case, whilst my practical knowledge of them might be passably good, I was not justified in thinking that I possessed greater knowledge than any individual member of this Society, or that I could by myself place any one subject on a more sound basis or give any new ideas of importance. After coming to this conclusion, I decided not to write a paper upon any one subject, but to give you a few "stray thoughts," such as have from time to time occurred to me during my work or during the perusal of our dental literature; thoughts and ideas that I have often wished to discuss with my fellow practitioners; thoughts similar to those which I have no doubt have occurred to each and all of you, and which I trust will lead to a very free discussion, for I cannot hope that you will entirely agree with all that I put forward.

Following upon Mr. Gilmour's interesting paper at our last meeting, my first thought is on a subject which has given rise to many papers, articles and discussions, and one which always interests and very frequently causes me much anxiety, namely, the administration of chloroform for the extraction of teeth, I would ask, Is such administration ever justifiable?

No one can deny that Sir James Simpson, by the introduction of chloroform, conferred an inestimable boon upon suffering humanity. The medical profession and the public generally have benefited to an incalculable extent by its use. But can any one say that it is a safe drug to use? Have we any better knowledge as to what its effects are likely to be in any single case than we had when it was introduced fifty years ago? Dr. Dudley Buxton, in his address delivered in celebration of the bi-centennary of the introduction of chloroform, admitted that "the mortality from its use is *not less* than it was." Statistics go to prove that the rate of mortality is much higher in chloroform than in ether administrations. In three tables giving 689,135 administrations of chloroform, there were 224 fatal cases, or one in 3,076; and with 422,134 administrations of ether, there were 28 fatal cases, or one in 15,076. These figures, I believe, are for surgical cases.

Now the extraction of any number of teeth can scarcely be said to be an operation which is likely to have a fatal termination; but who can say positively that the administration of chloroform for the extraction of a single tooth may not be fatal? Though I have

not any statistics to offer, the cases which occur with lamentable frequency—the last one was recorded in Liverpool this month—appear to point out that the administration of chloroform for dental operations is even more dangerous than it is in general surgery.

The medical and dental press, our eminent anæsthetists, the late Mr. Clover, Dr. Hewitt, Dr. Dudley Buxton, Mr. Bailey, and Mr. Woodhouse Braine, and I believe the bulk of the members of the dental profession, strongly condemn the use of it. If this is so, why do we continue to have it administered in preference to a safer drug? I think the answer lies in this: In the provinces we have very few special anæsthetists, and when it becomes necessary to employ a drug that will produce longer anæsthesia than nitrous oxide or nitrous oxide and oxygen, the patient's own medical adviser is called in, to whom is left the choice of the agent to be used; usually a general practitioner, whose practice in anæsthetics is principally confined to the administration of chloroform in midwifery cases. Lulled into over confidence by his success in these cases he fails to look upon a dental operation as anything but simplicity itself, and often presents himself with only a small bottle of chloroform and a serviette; no restorative; no hypodermic syringe; no drugs; in fact, no anything, and should a mishap occur he can only hope to restore the patient by means of artificial respiration. I am not one of those who believe that in nitrous oxide and nitrous oxide and oxygen we have anæsthetics that supply all our requirements, for many cases present themselves, especially among the poorer classes of our patients, where prolonged anæsthesia is necessary; but I should like to banish chloroform from the dental surgery and substitute for it nitrous oxide and ether, and I believe the majority of you agree with me in this. But how is this to be accomplished? Only by combined action on the part of the dentists, and I would suggest that some steps should be taken with this object in view.

With a view to minimising the risks in chloroform cases I have recently, whenever practicable, arranged to take the case early in the morning, before beginning my usual work, at the patient's own home, and to operate with the patient lying upon a couch. The objections to this are the awkward position for operating and the want of convenient appliances, such as one has at hand in one's own surgery. But the disadvantages are counter-balanced by the feelings of greater security.

This subject of chloroform anæsthesia in which we have to work with medical men leads me to other thoughts concerning the medical profession generally, and the General Medical Council in particular. Now we all know that at the passing of the Dental Act the General Medical Council was constituted the caretaker and nurse of the dental profession. It was to receive all our pocket money in the shape of registration fees, and to spend it for us ; to say what was good for us and what was not good ; to determine who might be registered as a dentist and who not. And, according to Clause 4 of the Dentists Act, it was empowered to prosecute any offenders against the Act. Now this seemed quite right and proper at the time of the passing of the Act, and no doubt those indefatigable workers who secured us the benefit of the Act thought that we should gain in prestige by being thus placed, as it were, under the wing of the medical profession. They thought that the enlightened members of the medical profession, the General Medical Council, understood their feelings and sympathized with them in their efforts to revise the status of the dentists of their day ; would help to further efforts in obtaining a body of highly educated and trained men to follow the practice of dentistry : in short would help to raise dentistry to the rank of a first class profession.

But I think this is now looked upon as a mistake. How has the General Medical Council looked after our interests ? How has it helped dentists to attain the position they have attained ? By allowing Dick, Tom and Harry without qualification or one atom of right, to register as dentists years and years after the time appointed for unqualified persons to register ; by allowing us no voice or representative on the Council to make suggestions as to the management of our affairs ; by allowing the British Dental Association or private individuals to prosecute offenders, and to pay for such prosecutions ; by trying to cut down the dental curriculum, and so reduce the general standard of education. Did not one of the members of the General Medical Council a few months ago protest against dentists knowing too much surgery ? He said : " It should be borne in mind that the examination was of gentlemen who were to receive a license to practice dentistry pure and simple." But what is this eminent gentleman's idea of dentistry ? He gives it in the following words :—" It is a qualification for drawing teeth—dentistry pure and simple." And again at the last meeting of the General Medical Council, when the subject of dental education was

under discussion, Sir Richard Thorne gave utterance to the following remarks:—"If there was one thing which had astonished him since he had been a member of the Council it was the encouragement given by the Council to mongrel doctors." He had even gone so far as to prepare an amendment for proposal with the support of Mr. Teale and several other members:—"That it be remitted to the Dental Education and Examination Committee to consider and report whether it is not possible and expedient so to restrict the curriculum for dental students as to make it less adapted for the practice of medicine and surgery and better adapted to the practice of dentistry." Can anyone realize that eminent men could possibly be so ignorant and narrow-minded? And this is the way in which the General Medical Council helps us to obtain rank as a profession, and we must perforce grin and bear it, because we have sold our birthright and have truly received a mess of pottage.

One can only fancy that Sir Richard Thorne's utterances come from a man who is jealous of the general knowledge possessed by dentists, perhaps to the detriment of the members of his own profession; many of whom, I fear, show lamentable ignorance so far as their own professional attainments are concerned. I feel sure that the majority of dental students at the time of obtaining their degree are far better equipped and better qualified to follow their calling than are the majority of medical students; they possess not only theoretical but practical knowledge, which they are able to turn to good account at once; whereas the newly fledged medical must gain the bulk of that knowledge which is to be of use to him as a general practitioner after he has left the schools. These enlightened members of the General Medical Council need have no fear. The dentist, as a rule, has quite enough to do in his own domain without trespassing upon the field of labour of his medical friends; he has no wish to prescribe in cases of measles or small pox, or to operate upon any other than dental structures. But can as much be said for the general practitioner? How often does he take purely dental cases in hand and make a mess of them? How many medical men called in to treat facial neuralgia ever think of examining the teeth or sending the patient to a dentist for examination? Very few; as a rule they prefer to dose the patient with drugs, to attend for days and weeks, when in the majority of cases the dentist could have given relief in half an hour. Or if he is called to see an alveolar abscess, what is his mode of procedure? Does he advise a visit to

the dentist? Very rarely; he generally prescribes an aperient, poultices, formentations, lancing, and attends the patient through days of agony, and when all the swelling has disappeared and the pain subsided, thinks it might be advisable to pay a visit to the dentist. Would it not be better for the members of the medical profession and the public generally if the General Medical Council, instead of trying to curtail the dental curriculum, were to add to the medical curriculum a course of lectures on Dental Surgery?

Now, gentlemen, I fear you will have had enough of this, so we will turn our thoughts to strictly dental matters, and I would like to draw your attention to the new regulations relating to the Diploma in Dental Surgery. Section 1 states that "candidates who register as dental students after the 1st of January, 1897, are required to pass three examinations, &c., and to produce the following certificates before admission to the several examinations, &c." And clause 4 of this section: "Of having attended at a recognized dental hospital and school a course of practical dental mechanics, &c." Now it is obvious that the board of examiners consider the majority of dental students who present themselves for examination are not properly trained in mechanical dentistry, although they are supposed to have spent at least three years in acquiring practical knowledge of that part of their work. Probably the examiners are right. But if dentists who take pupils (and premiums) fulfilled their part of the contract this state of things ought not to exist.

This new regulation will make it absolutely necessary for each dental hospital to appoint a paid dental mechanic as a permanent member of its staff, and I think the committees of many provincial hospitals will find this a heavy tax upon their funds, and in order to meet the extra expenditure incurred they will be compelled either to raise the students' fees or to supply artificial dentures at a profit.

To my mind this new rule is not a good one; the increase of students' fees or doing mechanical work at a profit might have been and should have been avoided. If the board of examiners had introduced a new regulation compelling all students to undergo a thoroughly practical examination in mechanical dentistry before allowing them to commence their hospital work, probably a better result would have been attained; dentists would have looked better after the interests of their pupils, and would have given a good return for the premiums received; the committees and staffs of the dental

hospitals would not have had their cares and anxieties increased. And there is another point in connection with this matter which should not be overlooked. When a provincial dental hospital appoints a permanent mechanic, and begins to supply artificial teeth, is there not a probability of abuses creeping in and a consequent competition with a class of respectable and deserving dentists whose practices consist mainly of supplying mechanical work to the poorer people?

All dentists undergo a sort of examination at the hands of their patients, and there appears to be a regular set of questions which one is expected to answer frequently, such as: Why do my children's teeth decay so early in life; I did not have to visit the dentist so frequently when I was young? My parents had very good teeth; why have mine decayed? Don't you think the people of this town have worse teeth than the people who live elsewhere, and so on. Though the frequent repetition of these questions may become rather tiresome, each one offers food for reflection, and the following one has particularly arrested my attention: Don't you think the water in our district is very bad for the teeth? Now it happens that our drinking water contains a very large percentage of lime in solution, and if there is any virtue in the practice of giving lime water to young children in order to help the formation of the bones and teeth, then the young people in our district ought to possess almost perfectly calcified teeth; but I fear they are no better equipped in this respect than the young people of any other district, and I cannot help thinking that the lime salts held in solution in drinking water are not assimilated, or at any rate do not assist to any material extent in forming or strengthening the bones and teeth.

This subject suggests another thought. For years past we have been almost overwhelmed with different preparations of course oatmeal, whole meal, and brown breads, &c., and each preparation has received the approval of some eminent authority, who has testified to its special bone forming properties, and no doubt the preparations do contain all the elements claimed for them, particularly in the husks of the corn, which contain lime salts in abundance. But are these elements soluble; are they more likely to be assimilated than the lime salts in the drinking water?

Now a very few words about the treatment of pyorrhea alveolaris. We have recognized it as a special disease for a good number of years, and by the exercise of patience and perseverance and

periodical attention we may alleviate the trouble, render the patient comfortable, and the affected teeth useful for a very considerable time ; but I fear we must admit that with our present knowledge we cannot absolutely cure an advanced case. As a rule it occurs in the mouths of people whose teeth are comparatively free from caries, and who are not compelled to pay regular visits to the dentist, and when they do present themselves we generally find the disease pretty far advanced, and perhaps several teeth hopelessly involved. Does not the comparative failure of our local treatment point to general constitutional causes as the source of the mischief? If so, can general, combined with local treatment, effect a cure?

My last thought, and one which is perhaps as frequently with me as any other, is with respect to the arduous nature of our work, the sacrifices and self control which it entails, the trials and strains upon one's constitution and health, the ceaseless round of similar cases, the constant application and close confinement offering no opportunities for rest, recreation, or exercise during one's working hours, which necessarily occupy the best part of almost every day ; and to the younger members of this society my earnest advice is to take up some pleasant hobby or outdoor exercise which will be the means of keeping you in good health ; for though you may not feel any ill effects from close and constant application to your work whilst you are young and vigorous, the day will assuredly come when you will regret having neglected golden opportunities for the sake of golden coin.

ON NEW METHODS OF TREATING DISEASED PULPS.

By Dr. H. BÖNNECKEN, Professor at the German University of Prague.

(Translated from Oesterreichisch-ungarische Vierteljahrsschrift für Zahnheilkunde, Vol. xi. left 1).

IN September, 1896, at Cologne, I made a communication to the autumn meeting of Rhenish and Westphalian dentists on new methods of treating diseased pulps. The therapeutical propositions which I made rested on the experience of a year ; they seemed, therefore, to need further verification. During the last year my observations have considerably increased, especially in my new field of work at Prague, so that I believe myself entitled to communicate shortly the results.

The long and generally accepted method of treating diseased pulps, I mean the application of arsenic, followed by extirpation of the pulp and filling of the root canal, fails in two important particulars: it is at once lengthy and complicated, and painful for the patient.

To make my standpoint clear on this question, I wish to state that I regard the ideal to be aimed at in treating inflamed pulps, is to remove every trace of the destroyed tissue, to sterilize the root canals and then to fill them right up to their apices with some suitable material.

Only in a tooth so treated shall we have absolute freedom from inflammation of its periosteum, and expect it to remain as unimpaired a masticating organ as those teeth with living pulps.

Unfortunately it is impossible to reach this ideal in a large number of instances. To remove the remains of a dead pulp from the buccal roots of upper molars, or from the slender roots of bicuspid, is a technical problem, in the execution of which we meet an insuperable difficulty in 90 per cent. of the cases; we are compelled, therefore, to leave some remains of the pulp in these canals. But even in other canals, which are permeable to our nerve instruments, we are often unable, especially in nervous women of the upper classes, to complete the radical extirpation of the pulp, for the operation is so painful, even in spite of using arsenic, cocaine or chloride of ethyl. Our patient, freed from suffering by the wonder-working power of the arsenious acid, usually arrives for the second step of the operation in a trustful mood, and expects, as a consequence of the soothing verdict of the doctor, "the nerve is now dead," that the filling the tooth will be painless. Did the patient doubt the doctor's word he would be reassured by glancing at one of our modern dental text-books, for all in unison state that the life of a pulp is completely destroyed in from 24 to 48 hours by arsenious acid. But that which is stated in the text-books is not always true our patient will be assured at the moment when our nerve extractor penetrates into the root canal. The removal of the crown portion of the pulp can usually be painlessly removed by the use of a sharp, strong, round bur; but the extirpation of the root portion of the pulp is almost always a painful experience. Intellectual and temperate observers have assured me that they would sooner undertake the extraction of a tooth than the extirpation of the pulp of a many rooted tooth. We can, of course, reduce the pain of this

operation to a minimum by the repeated application of arsenic. This is always necessary in chronically inflamed pulps, which are well known to be extremely resistant to the action of arsenious acid. I am in the habit, in these cases, of removing only the crown portion of the pulp at the first sitting, and of re-applying the acid to the root portions. This application one can leave in for six to eight days, provided the cavity be hermetically sealed with cement. Even a third and fourth application may be needed, so that the treatment of a many-rooted tooth, with a chronically inflamed pulp, may, in a nervous patient, extend over two or three weeks. What dentist has not wished for some quicker method of treating these wearisome cases? How great is the need of shortening the present system of treating pauper patients, since each hour spent over one patient means a corresponding limitation of the day's usefulness? And how will a dentist in hospital practice, with from 10 to 20 pulps to treat, obtain time to remove out of each canal the last traces of the dead pulp?

The need of a method to obviate extirpation of the pulp and the filling the roots without impairing the result is very pressing.

The authors who have concerned themselves with the solution of this problem are, as is well known, A. Witzel,* Baume,† Miller,‡ and Th. Söderberg.§ Nobody nowadays would doubt, least of all A. Witzel, that those preconceived ideas which he held 20 years ago, when he advocated amputation of the coronal portion of the pulp, have not been realized. That portion which remains in the roots does not live but dies. It may, perhaps, be long before the last portion of the pulp at the end of the root dies; but the end result is the same; given aseptic conditions, the pulp always mummifies. And during the period while this result is pending, it may be months or even years, the tooth is continuously, or periodically, sensitive to heat and cold, or it may sometimes suffer from a slight pericementitis apicalis, which certainly does not pass beyond the stage of hyperæmia, but which prevents the possessor from biting on that particular tooth.

Experience shows that the same occurrences happen in those premolars and molars in which, on account of their inaccessibility,

* A. Witzel: *Pulpaerkrankheiten*, 1886.

† Baume: *Monatsschrift für Zahnheilkunde*, 1888.

‡ Miller: *Lehrbuch der conservirenden Zahnheilkunde*, 1896.

§ Söderberg: *Dental Cosmos*, 1895.

or on account of the hyperæsthetic condition of the patient, we are obliged to leave portions of the pulp behind. Twice I had the opportunity of extracting and examining such teeth. In both cases it was an upper molar in which portions of the pulp remained which had been impregnated with iodoform paste. Months had passed since the teeth were treated, and during which the teeth had been so sensitive to hot and cold, and so impossible was it for the patient to bite upon them that their extraction was desired. The pulp canals gave on cross section the characteristic iodoform smell. The pulp remains were shrunken and but slightly blood-stained. Under the microscope the tissues showed signs of degeneration; fatty degeneration and diminution in the power of the cells to take up stains, globules of colloid and calcareous matter showed between the bundles of connective tissue and the capillaries were thrombosed.

We must believe that the nerves in such an atrophied pulp are extremely irritable, else how can it be explained why, with a pulp of so little vitality, every mouthful of hot or cold water should cause acute pain in the affected tooth? The ultimate condition of this process is complete mummification, always provided the remains of the pulp are aseptic. When mummification has occurred, the pulp remnants being shrunken into dry, sterile threads, then, according to our experience, the irritability of the tooth ceases to thermal changes, and to its tendency to periosteal inflammation. At a later date periosteal inflammation is only certain when, with the shrinkage, a slow disintegration of the tissue follows, accompanied by the evolution of gases.

How, then, can we shorten this slow and, for the patient, troublesome death of the pulp? Have we means which possess the power: first to destroy the pulp in a short time, say a few hours; and, secondly, to ensure with certainty a permanent asepsis of the pulp remains?

Borax, recommended by Baume for this purpose, fulfilled, according to experience, neither the first nor the second condition: it neither destroyed the vitality of the pulp nor were its antiseptic powers sufficient. Miller, from a series of brilliant experiments in the power of various antiseptics to penetrate the animal tissues, came to the conclusion that a mixture of sublimate 0.003 and thymol 0.005 in the form of a wafer laid upon the pulp

remnants cause rapid death of the pulp tissues and a sure sterilisation.

I have tried Miller's plan in 50 cases. In 12 patients no reaction of the pulp nor of the periosteum followed; the teeth on testing were neither sensitive to heat nor cold, nor to tapping. In the remaining cases the patients stated that for some hours immediately after the treatment they had pain, which by most was described as acute. In most cases, for a few days after treatment, the teeth were perceptively tender to percussion. In all the patients, whom I saw some months after the operation, the teeth were healthy, but showed more or less sublimate staining. By this process, therefore, the living remains of the pulp were rapidly killed by coagulation of the cell protoplasm, and, at the same time, the tissues were so impregnated by the sublimate and thymol mixture that there could be no doubt of their thorough and permanent sterilisation. The objections to the method, which have been recognised by Miller himself, are, first, the tendency of the sublimate solution to cause pain, and, secondly, the staining of the dental tissues, which limits an otherwise excellent method to the molar teeth.

Söderberg (Sydney) records 97 cases of mummification of the root pulps after applying arsenic and amputating the coronal pulp. Tannin, which he at first used for this purpose, caused a discolouration of the tooth, as did oil of cassia. He recommends a paste consisting of alumin exsicc., thymol, glycerol, zinc oxydat. and has had excellent results from its use.

I have not tried Söderberg's method, because *à priori* I regard the coagulating and disinfecting power of his paste as much less than that recommended by Miller, and also because I have for a long time obtained thoroughly satisfactory results by use of another material, which seems to me destined to play an important rôle in connection with the question of pulp treatment. This material is formaldehyde. Next to carbolic acid and sublimate, probably no other medicament could be named which has found so many medicinal uses so immediately after the discovery of its remarkable action on animal tissues. Formaldehyde is assured of its position in the *materia medica* from two properties: first, its power as a coagulant, and second, as a disinfectant. Formaldehyde, in aqueous solution, usually known as formalin, even in weak solutions (1 to 2 per cent.) causes immediate coagulation of serum albumin, so that

the tissues become in an extraordinarily short time remarkably hard, resembling in consistence that which would have been produced by absolute alcohol in many hours; but with this difference, the shrinkage due to the dehydrating action of the alcohol is absent. Lately, therefore, it has been used for rapid hardening of anatomical and histological preparations, which brought to light a further valuable property of formalin: that specimens so treated retain their normal colour, whilst this, as is known, is lost when alcohol is used. The rapidity with which all protoplasm is coagulated by formalin is so great that during an operation of half-an-hour's duration a piece of tissue placed at the beginning in formalin to harden can be cut by a microtome and a permanent stained preparation submitted to the surgeon before he has finished the operation.

As a disinfectant this material is very powerful. According to Pottevin,* formaldehyde—

At 15 degrees Celsius—

15 per cent. solution kills anthrax bacilli in $1\frac{1}{2}$ hours.

42 " " " " " 1 hour.

At 35 degrees Celsius—

15 per cent. solution kills anthrax bacilli in 30 minutes.

42 " " " " " 15 "

At 52 degrees Celsius—

15 per cent. solution kills anthrax bacilli in 5 minutes.

45 " " " " " 5 "

2 " " " " " 15 "

From which it follows that a 10 per cent. solution of chlorinated lime and a 1 per cent. solution of sublimate at 52 degrees Celsius are not more powerful than a 2 per cent. solution of formaldehyde. Formaldehyde was first introduced into dental practice by Marion† (Paris) and Lepkowsky‡ (Cracow). Both observers used the commercial solution of formaldehyde (about a 40 per cent. solution) in cases of inflammation and of gangrene of the pulp and of periostitis. Lepkowsky, when the patient was anxious to be quickly treated, or when the field of operation was difficult of access, laid a

* Pottevin, "Annales de Pasteur," 1894.

† Marion, "Du Fermol et de son emploi en Therapeutique Dentaire." *L'Odontologie*, 1895.

‡ Lepkowsky, "Verhandlungen der Deutschen Odontologischen Gesellschaft," Band. VII.

pledget of wool soaked in a 40 per cent. solution of formaldehyde immediately on the exposed pulp and closed the cavity with a permanent filling. He states that severe pain of a couple of hours' duration followed, but that afterwards the tooth remained quiescent and permanently not subject to stimuli. After destruction of the pulp with arsenic and in cases of dead pulps, Lepkowsky employed with happy result a concentrated solution of formaldehyde, and praises the rapidity with which it sterilized the foulest root canals; but at the same time he noticed the frequency with which severe inflammation of the periosteum followed this treatment. By experiments on animals Lepkowsky determined that formaldehyde penetrates like arsenious acid through healthy dentine, and exercises medicinal action on the pulp. He drilled holes in the teeth of dogs of such a depth that a faint red colouration of the pulp could be seen through the dentine. Formalin was placed in the holes, and a cement filling was inserted. He found on examining the pulps after periods of 24, 48 and 72 hours that at the place where the formalin had penetrated a hardening of the tissue had occurred, the distant parts remaining normal. My own experiments on the action of formaldehyde on diseased teeth began over two years ago, and originated in the favourable results which had been obtained at the Pathological Institute of the Bonn University in hardening anatomical preparations. I was astonished at the speed with which this new drug caused coagulation of the cell protoplasm, and I thought, at first, to find in formalin the much wanted means of diminishing the conductivity of the dentinal fibrils.

I therefore began by making a large number of experiments in this direction, and determined that a 40 per cent. solution of formaldehyde placed in sensitive cavities markedly reduced the sensibility of the dentine. But the drug exerted so far reaching an action that in large cavities there is great danger of damaging the pulp. To my annoyance in two cases in which I used formaldehyde to lessen the pain of drilling I found, after a time, the pulp to be dead. On opening the pulp chamber I found the pulp to be of normal colour, it did not bleed when exposed, had scarcely shrunk, and possessed only at the apex a trace of sensibility. As in both instances there was no other reason for death of the pulp, and investigation of the last showed quite the appearances of hardening due to formalin, and because these observations tallied with the results obtained by

Lepkowsky in his experiments on animals, there appeared to be no doubt that a 40 per cent. solution of formaldehyde is a poisonous substance, which is able, like arsenious acid, to destroy the vitality of a pulp even through a covering of healthy dentine. Weaker solutions (10 to 5 per cent.) exert a much weaker action both on the dentinal fibrils and on the pulp. During my earlier investigation of formaldehyde I had to avoid the use of the strong solution on account of inflammatory symptoms. In exceptionally sensitive, deep cavities, I frequently used cotton-wool pledgets dipped in 5 per cent. solution and sealed them in for 24 hours with Fletcher's cement. The anæsthetic action of the dressing was considerable. I could on the following day painlessly remove the last traces of decay. The sensation in a distal cavity of a premolar being so slight, though, the previous day, before the dressing, it had been most sensitive, first suggested to me that even weak solutions endanger the vitality of the pulp. A year later I had occasion to fill a mesial cavity in the same tooth. In this tooth, which throughout had been perfectly comfortable, which showed no change in colour nor tenderness on percussion, I found, while preparing the cavity, a dead pulp. After this experience I have objected to the use of formaldehyde as an obtundent of hypersensitive dentine. I think I may take it that even the weak solutions of formaldehyde, which when applied to living dentine only show slight anæsthetic action, by prolonged action on the dentinal fibrils, or especially on exposed pulps, produce a coagulation of the surface of the pulp at the point of penetration, a danger which, knowing the sensibility of the pulp to tissue injury, will be followed in an undetermined percentage of cases by a gradual, slow death of the pulp up to the apex of the root. According to the greatness or smallness of the irritant, so either months or years may pass till complete death of the pulp. It appears to me that the absolute absence of irritation as the pulp dies is characteristic of the action of formalin ; also the absence of pigmentation of the tooth, a circumstance which finds its explanation in the known fact that formaldehyde prevents a separation of the blood pigments.

These experiences urgently warn against the use of formaldehyde, either in concentrated or weak solutions, as an obtundent of dentine.

My observations on the action of formalin on the living pulp led me to test the worth of this new material as an accessory to the use

af arsenic as a pulp destroyer. The thought suggested itself to try whether formaldehyde is of use to coagulate the root portions of destroyed pulps, in a sense to harden in the mouth as we harden a microscopical preparation. It seemed from the outset probable that knowing its strong antiseptic action formalin would preserve aseptic the hardened and so dead pulp remnants.

I began my experiments with the 40 per cent. solution which can be bought. The teeth dealt with were all premolars and molars with pulps acutely or chronically inflamed ; but those were excepted in which the pulps were already dying. Two days after the application of arsenic, rubber dam having been applied, the coronal portion of the pulp was removed by sharp round burs, the pulp chamber was thoroughly washed out with 40 per cent. solution of formaldehyde and a pledget of cotton wool moistened with the same was sealed in the pulp chamber with cement. Afterwards, at the same sitting, the permanent filling was inserted. In this way I treated about 50 cases, with in each case the same result: immediately after inserting the formaldehyde dressing pain began which lasted from half-an-hour to four hours and slowly ceased. In one instance the pain lasted twelve hours.

The longer or shorter duration of the pain period was obviously influenced by the extent of the action of the previous arsenical dressing, so that when the pulp tissue had been almost destroyed the pain was of short duration, but lasted a long time when the pulp destruction was incomplete. After the period of pain had passed the tooth was wholly insensible to temperature changes and to tapping. While a tooth, the pulp of which has been wholly extirpated is, as is known, always subject to slight periostitis of a few days' duration, it was quite exceptional for this to occur in those treated with formalin (these teeth were always finished with amalgam fillings). Subsequently, also, no alteration occurred. Satisfying as the end result of this treatment seemed, the initial stage of pain must on the contrary be looked upon as a great objection to the method. As it appeared probable that this pain was due to the use of too concentrated a solution of formaldehyde, I subsequently took refuge in marked dilution, changing from a 40 to a 20 per cent. solution, from this to a 10, and finally settled on a five per cent. solution. I also tried to relieve the pain by addition of cocaine to the solution.

Not to weary by detailing my various experiments, I may at once say that at last I settled on the following formula :—

R Cocaine	...	...	}	$\overline{a\ a}$	...	1·0
Thymoli	...	...		
• Misce exactissima terendo. Adde Sol.						
Formaldehe quos (40 per cent.) gutta X						
zinc. oxid.	...	...	...	...	...	2·0
fiat pasta.						

The thymol is added in this paste with the object of causing a certain and permanent sterilisation of the tissues, because the possibility cannot be wholly excluded that the formaldehyde becomes rapidly diluted, and so, later, living germs may be able to develop. When cocaine and thymol are rubbed together in the mortar they deliquesce, taking up moisture from the air. Therefore after the addition of 10 drops of formalin a relatively large amount of oxide of zinc must be added to give the mixture the consistence of a paste. Up to the present I have treated about 500 cases of inflamed pulps in this way. Forty-eight hours after the arsenical dressing I have removed the coronal pulp, then washed out the pulp chamber with a 5 per cent. solution of formaldehyde, and afterwards have placed a piece of wool, moistened in the above paste, on the exposed root pulp. When the pulp is thoroughly painless I have pumped some of the paste into the root canals by means of a Donaldson bristle. Usually the cotton wool pledget moistened in the paste remained in the pulp chamber, this was covered with cement or guttapercha, and finally, at the same sitting, the permanent filling.

Of the results of this treatment, which in simplicity and rapidity leaves little to wish for, I can speak most favourably. Only once in these 500 cases was I obliged to remove the filling or to extract the tooth. In a few instances which were treated by a student, who had only short experience in dental operations, the patient complained for some weeks of pain in that tooth on contact with hot or cold things. These cases were usually premolars with very narrow root canals, and I look upon it as very probable that the formalin had not touched the root pulp.

The pain noticed by the use of the concentrated solution of formalin ceased when I applied formol paste—which name I use for brevity's sake. The explanation of this can probably be found in the dilution of the active principle and in the addition of a relatively

large quantity of cocaine. In teeth so treated no discolouration occurs. I believe myself justified, therefore, after my two years' experiences, in recommending to my colleagues this method for the after treatment of destroyed pulps. But I would again emphatically repeat, what I have already mentioned in the beginning of this communication, that throughout I maintain that the long-trusted method of destroying the pulp, and subsequent filling of the roots, is at the present time the only one for the treatment of inflamed pulps which is not open to objection. But for the many cases in which this ideal treatment for various reasons cannot be carried out, I recommend the above described modification as, in my experience, the best method so far suggested. The immediate result is thoroughly safe, and though the two years' observation is far too short to speak as to its permanence, still it seems highly probable that the sterilized pulp remnants will form as permanent a root filling as chloride of zinc, cement or guttapercha. Mishaps may only then be expected when the pulp remains are not thoroughly sterilized. The proposed operation is so simple and takes so little time that one may, perhaps, be inclined on this very ground not to proceed to treat the pulp remains with sufficient thoroughness and cleanliness, for it is a known fact that precisely the easiest and simplest dental operations, ex. gr., small amalgam or cement fillings, are those which usually show more lack of care in execution than technically difficult and lengthy operations. Apparent as it may seem, I must emphatically state that the result of the treatment depends solely and only on the rules of asepsis being carried out minutely, both during the clearing out and washing the pulp chamber and while applying the formol paste to the pulp remnants. Further, one avoids inflicting pain on the patient by unnecessarily disturbing root canals filled with half devitalized pulp tissues. For it is the chief advantage of the method that it is so much more pleasant and sparing to the patient than the previous method of pulp extirpation. In my practice, therefore, I always apply formol paste in many nervous and sick women of whom we dentists see so many, patients who sometimes after a painful operation remain in bed for days in deep nervous prostration. Here it is a humane duty to avoid even the slightest pain in treating the pulp. And for such cases formol paste has become quite indispensable to us.

I should like to add a few words regarding a new method which

I have used during the last six months in all cases of gangrenous pulps, and with such striking results that I now willingly undertake these cases of septic pulps, though previously they were a worry to me. This is a little modification of the use of sulphuric acid in the root canals as advised by Dr. Callahan* in 1895. I regard these ideas of Callahan's as the greatest advance in the treatment of root canals since the advent of antiseptis. It consists in placing in the pulp chamber a 50 per cent. solution of sulphuric acid, and by pumping this acid into the root canals with the finest nerve bristles at once to rapidly enlarge these so frequently quite inaccessible canals, and at the same time to disinfect strongly these. If now one uses, in order to neutralise the acid, not bi-carbonate of sodium, as Callahan advises, but sodium peroxide, which I have used for six months, and can thoroughly recommend, we get in the root canals the reaction $\text{H}_2\text{SO}_4 + \text{Na}_2\text{O}_2 = \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}_2$ a rapid evolution of peroxide hydrogen, in *statu nascendi*, which effects prompt sterilisation. So we have a method which after many experiences I regard as ideal.

The chief merit of Callahan's sulphuric acid method consists in the strong acid rapidly decalcifying the walls of the pulp chamber and destroying the organic contents of the same, so that a canal which could previously be entered only with trouble, or not at all, is, a few minutes after the application of the acid, so roomy that further antiseptic treatment and filling can be carried out without difficulty. Root-reamers, which I have regarded as instruments inflicting more injury than good, have been quite replaced by Callahan's method. That which it is possible to effect by half-an-hour's wearisome work, using root drills, can be done in a few minutes by using a 50 per cent. solution of sulphuric acid; and it is not necessary, as the author directs, to use platinum-iridium needles. According to my experience, Donaldson's nerve extractors and dressers meet the purpose, provided they be carefully washed in water each time they have been dipped in the acid; indeed, they are to be preferred to the neither very elastic nor slender iridium bristles. The sodium peroxide, a strong and caustic alkali, is a yellow powder, which must be kept in dark, carefully closed glass bottles on account of its hygroscopic properties. Exposed to the air it rapidly decomposes into Na_2O and O . One dips the previously moistened bristle into the powder, and passes it with the adherent powder into the root

* Callahan, *Dental Cosmos*, 1895.

canals, which are already full of the 50 per cent. solution of the acid. There is immediately a rapid evolution of gas—hydrogen peroxide—the well-known and powerful antiseptic. If the root canal was not sufficiently enlarged after the introduction of the acid, it will become at once remarkably larger after using an excess of peroxide of sodium, which, as a caustic alkali, forms a soap and destroys the fatty contents of the canals. The rapid evolution of gas ejects the contents of the canals into the pulp chamber. Chemical affinity, in a more exact way, cleanses the root canals as previously we were wont to do by manipulation. I most heartily advise my colleagues to substitute this for their previously trusted and beloved methods.

After the cavity and the pulp chamber have been thoroughly cleansed, the coffee-dam having been adjusted, one places a drop of the 50 per cent. acid in the pulp chamber. If it is an upper tooth one endeavours to place the head in such a position that the acid remains in the pulp chamber. Failing this, as in upper distal cavities, one must gradually introduce the acid on cotton wool or on the bristles. Then one endeavours to introduce the acid into the nerve canals by means of the finest Donaldson bristles. Soon the narrow openings become wider and the needle passes easily into the roots, and with the finest Donaldson pulp canal cleansers one removes the pulp debris and the finely powdered calcium sulphate which has been formed by the action of the sulphuric acid in the calcium salts, so the lumen becomes larger. Then introduce the peroxide of sodium, as before directed, and repeat this till it produces a visible result. After removing with cotton wool pledgets the debris which the gas has ejected, repeat the procedure, once, twice, or more times, using alternately the sulphuric acid and the peroxide of sodium. Finally flood the canals with any antiseptic that is preferred, especially would I recommend oil of cinnamon, on account of its great penetrating power, dry the canals with warm air and fill with thick chloropercha; then insert the permanent filling. It was my earlier practice to insert a temporary filling for eight to 14 days, but I regard this precaution as needed only by those who are not experts: I advise the experienced practitioner to fill the roots at once.

Callahan advises, when the entrance to the root canals cannot be found, cementing in the pulp chamber for 24 hours a 50 per cent. solution of sulphuric acid. At the end of this time the walls

of the pulp chamber will be found white and decalcified, the entrance to the canals being seen as dark spots on a white background. If it is now impossible to pass the finest bristle into the root canals, they may be looked upon as obliterated and may be disregarded. But in hundreds of cases which I have treated in my private practice and in my "Klinik" it has not once been necessary for me to use this method.

It has been urged against Callahan's method that harm may result from the rapid decalcification of the tooth structure by so strong an acid. This is an untenable proposition, since the action of the acid is only of a few minutes' duration, and further decalcification of the tooth structure is prevented by the immediate neutralisation which must, of course, be thoroughly carried out. I am convinced that such who will take my advice to try this method a few times will agree with me that the dental world is greatly indebted to Dr. Callahan for his happy idea.

W.H.D.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above society took place on the 7th inst., Mr. W. E. HARDING (the President) in the chair.

Messrs. Breward Neale and G. N. Willis signed the Obligation Book and were admitted members of the Society.

The following members were balloted for and duly elected members of the Society:—Messrs. K. O'Duffy, L.D.S. Edinburgh, W. B. Woodhouse, M.R.C.S., L.R.C.P., L.D.S., and Frank A. Harsant, L.D.S. England.

CASUAL COMMUNICATIONS.

Mr. George Brunton sent a short account of a Strip Matrix differing from the usual form in that it has curved edges, intended to facilitate filling interstitial cavities in the interior region with gold.

The PRESIDENT said that Mr. Brunton had shown him the matrix a short time ago, and it appeared to him that its aim was to cut a matrix to fit the teeth to a definite scale.

Mr. BALDWIN thought that the originator of the idea was Mr. Lennox.

Mr. G. NORTHCROFT was of the same opinion, and said he had found in using the Lennox Matrix on front teeth that with a little adaptation it answered all purposes ; he had been using the method for over a year.

Mr. RICHARDS (Birmingham) exhibited and described a composite odontome which had been removed from the mandible of a woman aged 23. A good deal of pain and suppuration has arisen from the growth, but both disappeared on its removal.

Mr. STORER BENNETT asked whether a microscopical section had been made, and if so with what result. He hoped the specimen would be presented to the Museum. The history of odontomes was nearly always the same, patients, who were usually about the age of 19 or 20, presented a history of suppuration, and necrosis was usually suspected. The surgeon in probing in such cases found some hard substance, cut down on to the bone and then very readily levered out the odontome. These odontomes were nearly always quite loose in their sockets, and simply held in their place by means of a capsule. Only that morning he had had an opportunity of seeing one of the most remarkable specimens that it had ever been his fortune to come across, namely, the upper jaw of a young man aged 17, which was removed the other day for a growth. When the jaw was removed it was not quite recognized whether it was a case of sarcoma or a solid bony growth, but it turned out that it was the latter, occupying nearly the whole of the cavity of the antrum. On making a section right through, a buried tooth was found, apparently a supernumerary, because all the teeth in the jaw were erupted with the exception of the wisdom tooth.

Mr. RICHARDS said he was sorry he could not present the specimen to the Museum, as the School at Birmingham had a prior claim on it.

Mr. J. F. COLYER exhibited a series of lantern slides thrown on a screen, which illustrated the great value in diagnosis of the X rays. Two were cases of retarded dentition, in one of which the patient, aged 15, had been under observation for nearly four years, and no apparent change had taken place in the condition of the teeth and gums. The only permanent teeth present were the first molars, the greater number of deciduous teeth were present and firm. By the help of the X rays the permanent teeth were shown unerupted. In

the second case the only teeth present in the mandible were the canines and the first molars, and in the maxilla the canines, central incisors and first molars. The skiagraphs showed in the mandible the first bicuspid, and in the maxilla a bicuspid also, in the parts of the mouth examined. Cases demonstrating the value of the X rays in the treatment of irregularities were also exhibited, one specimen showing that a supernumerary was the cause of separated central incisors, and another the presence of a second lower bicuspid unerupted. In the latter the first bicuspid only was present, and there was insufficient room for the second to erupt.

Mr. J. C. STOREY (Hull) also exhibited slides in the same connection. The patient, a girl aged 9, had a persistent left upper incisor root which had been extracted. Six months later the permanent tooth erupted on the labial surface of the alveolus, nearly half an inch from the gum margin. Skiagraphs were taken with the object of determining the direction of the root, as Mr. Storey felt that if it was a case of dilaceration there would of course be no possibility of turning the tooth.

Mr. D. GABELL suggested that stereoscopic views would give a much better idea of the locality and shape of buried teeth than an ordinary photograph. He had taken some that afternoon with 13 seconds' exposure, and had obtained views representing two positions. These views were then put into a stereoscope and a picture giving a much better idea of the case was obtained.

Mr. STORER BENNETT suggested that all Plaster of Paris models intended to be photographed should be first painted with some colour so that the contrast between the teeth and the gum could be greater.

Mr. J. F. COLYER read a short paper entitled "Formaldehyde in the Treatment of Pulp," with special reference to "Formagen." For some time formalin (which is a 40 per cent. aqueous solution of formaldehyde) had been employed in surgical and medical practice as an antiseptic, germicide and preservative, and had been found to give excellent results. Formalin possessed the property of rapidly hardening soft tissues without in any way causing shrinkage, and this, combined with its powerful germicidal properties, suggested its use as an agent in the treatment of the pulp. Lepkowski seemed to be the first to employ this drug in dental surgery. The results appear to have been successful, but the severe pain produced by even weak solutions

was a distinct disadvantage. During the past year Formagen Cement had been introduced by Abraham, and seemed to give such excellent results that Mr. Colyer thought it worthy of discussion by the Society. Being a secret remedy its precise composition was not definitely known ; but it was composed of a fluid and powder which when mixed together so as to form a cement slowly gave off formaldehyde. For his own satisfaction Mr. Colyer had had the composition analysed by two expert chemists independently, whose results agreed. The powder consisted of calcium carbonate and caustic alkali, the fluid was composed of methyl salicylate, eugenol and phenol, but not the slightest trace of formaldehyde was discovered in the first sample, though on examination of a second, an absolutely fresh sample of the powder and fluid, a very slight trace was found. He believed Kunert, in a paper on formagen, stated that the amount of formaldehyde vapour given off by the cement could not be detected by the sense of smell, but could be determined by the formaldehyde reaction. That formagen possesses great germicidal and preservative properties seems to be demonstrated by Bauchwitz, who considered that the eugenol and carbonic acid in the preparation act as anæsthetics, the dragging pain at times complained of by the patient being due to the former drugs increasing the hyperæmia already present. The formaldehyde vapour then gradually permeates the pulp tissue, killing all pathogenic germs and eventually converting the pulp into a jelly-like homogeneous mass, and stasis occurs. From clinical observations Mr. Colyer thought formagen an excellent material for the treatment of inflamed and exposed pulps. He had used it for some nine months in almost every type of case, and had found it produced excellent results, but whether these results would be permanent time alone would prove. Although he had used it somewhat freely, he had so far only had one case return complaining of after pain, and in this the application of lin. iodi. to the gum soon relieved the troublesome symptoms. In using formagen he always protected the pulp from pressure by a metal cap, which he regarded as essential to success, for however carefully one might insert a filling over the formagen cement, pressure on the pulp might occur, and so cause failure. He hoped the members present who had used formalin or formagen would give their experiences, for nothing assisted their knowledge of a subject like the free discussion of it.

A paper by Mr. BOYD WALLIS, entitled "Formalin," followed. He said its specific gravity was 1.070, and it possessed a very pungent and characteristic odour. Owing to the tendency of the somewhat concentrated solutions to revert to the solid the 40 per cent. was the strongest that would remain permanent. Formaldehyde ranked high as a deodorant. Either the solution or vapour would almost instantly remove the putrid odour from decomposed animal or vegetable matter, a putrid nerve, mal-odorous breath, &c. These properties, together with its action on gelatine, gelatinous and albuminoidal substances placed it in the front rank as a bacteriological, medical, and commercial agent. As a hardening agent in microscopy, for the preservation of food and vegetable structures, it promised to be of the greatest value. The vitiated air of a sick room might be immediately purified by fumigating with formalin. It had no injurious effect upon furniture, silk, wool, cotton, leather, and substances of a like character, iron and steel are acted upon by the gas and its solutions, which appear to have no effect on brass, copper, nickel, zinc, and gilt articles. The vapour given off by the solution was extremely irritating to the eyes, and the mucous membrane of the nose and throat, so that care was necessary, not only in using it on the teeth, but also in handling strong solutions, its action on the skin being similar to that of strong carbolic acid. Mr. Boyd-Wallis gave a lengthy table of purposes for which formaldehyde might be employed, from which the following have been selected as being more particularly useful to dentists:—

A solution of formaldehyde containing one part in 123,000 kills anthrax bacilli; one part in 2,500 destroys the most resistant micro-organism in one hour; one part in 500 as a mouth wash; one part in 250 to 200 a general disinfectant solution for washing hands, instruments, &c., in surgery, spraying in sick rooms, and as a deodorant; one part in 150 to 100 for hardening microscopic tissues, which should be immersed for a considerable time to give best results.

If formalin were used instead of formaldehyde, then two and a-half parts of a 40 per cent. solution of the former might replace each part of the latter.

In experimenting he found the action of formaldehyde upon certain substances somewhat remarkable, as it converted them into physically different properties, for example: paraffin subjected to the

action of formaldehyde was converted into a white friable powder which gave off formic gas when subjected to heat, but did not so readily melt. It was a powerful solvent for tannic acid, and also an excellent local anodyne, giving instant relief to the most severe toothache. In connection with this latter quality Mr. Boyd-Wallis cited several severe cases which had been satisfactorily treated. Gelatine, when subjected to the action of formalin, became insoluble and antiseptic, and when treated also with tannic acid Mr. Boyd-Wallis thought it would prove invaluable as a nerve capping.

Mr. BREWARD NEALE asked the number of cases in which formalin had been used.

Mr. HOWARD MUMMERY had used it in 71 cases, with only four which might be called failures. In one there was considerable pain, and in the other three discomfort. He thought his failure was due chiefly to his not having used a piece of metal for capping; he used parchment or paper, which was not a sufficient protection.

Mr. ROBBINS emphasised the need of care in using formaldehyde, stating that he suffered from severe conjunctivitis and had to be kept in the dark for two or three days, owing to the irritation set up by the use of a 40 per cent. solution in water evaporated over a bunsen burner to fumigate a room. Later, a peculiar form of chemosis exhibited itself, followed by a cyst in one eye for which an operation by the ophthalmic surgeon became necessary, who thought it due to the irritation.

Mr. F. J. BENNETT wanted to know if it was invariably used in all cases of exposure of the pulp, even when accompanied by periostitis. It was a mistake to think that it did not harm cloths, it undoubtedly removed the colouring material from cloth.

Mr. WALTER H. COFFIN said there was an interesting point about formalin which he had not seen mentioned in the English dental or pharmaceutical journals. If any one remembered the peculiar pungent odour of Hamamelis Extract, Hazaline, or Pond's Extract, and would compare it with a dilute solution of formalin, the similarity was so great that it had led to the strong assertion in America that one of the active constituents of Pond's Extract was due to formaldehyde. He did not think that it was, but there was so much mystery attached to the action of Hazaline when first introduced—many asserting that it had no action whatever—that the subject was of interest, especially as it had not been quite cleared

up. With regard to formagen, he had not used it very much from a disinclination to using a material he was not quite acquainted with, but he had tried to use formalin in several ways. In the first place one could buy what was called formalith in the market, which was a natural earth saturated with a 40 per cent. solution, and by mixing that with a little eugenol or phenol or any other similar material a very favourable substitute could be obtained for a formagen cement, and one which had given very good results, except that he had got pain in a large number of instances due probably to the fact of his using more formaldehyde than probably was contained in the formagen. He had tried another way. It was well known that the action of formalin on gelatine was so extraordinary in forming a hard substance that the resulting gelatine could be powdered to a very fine powder which was called glutol, and sold for dermatological purposes. It could be used for nerve canals more conveniently than catgut. It might be used dry or in a paste. He was satisfied that it liberated formaldehyde as it was supposed to do, and that it was very successful in the treatment of sores and wounds. It seemed to form a rapid scale and to promote healing by first intention. He had often used paraformaldehyde, a powder that gave very few of the reactions of formaldehyde. It might be mixed into a paste with eucalyptus or eugenol, or anything else, and in that way formalin could be easily applied. He had had very good results indeed from the various ways in which he had tried to use it in teeth. He had not selected his cases in any way but had tried to use it generally when he thought an ordinary process would be somewhat difficult or less satisfactory than the successful application of the formaldehyde. He thought there was a great future in its use if the best way to use it could be found out.

Mr. MORGAN HUGHES asked Mr. Colyer if he was in the habit of using formagen for root treatments in the case of old foul roots, also whether he had used formalin itself, and if so in what strength he was in the habit of using it.

Mr. STORER BENNETT thought that in fairness to a preparation that appeared likely to be of value to dentists members ought to bear in mind the instructions that accompanied the statement on the boxes of formagen. It was there stated that when the powder and the liquid were mixed together formalin was slowly evolved.

He supposed that it was intended to be understood that when they were mixed and used in the teeth at about 37 centigrades that the substance would be slowly generated. That might be one explanation of why the analysis failed to show any trace of formaldehyde, either in the fluid or in the powder; he should like to warn all members, as he did some months ago, when the subject was first brought up, of the danger of using formaldehyde in the treatment of sensitive cavities. Formaldehyde itself was of an exceedingly irritating nature, if it even got on the fingers the skin was irritated by it, but about the mucous membrane of the mouth it was excessively irritating. In anything stronger than a 4% solution it burned the gums very considerably. In his experience of it in cavities where the pulp was alive it was exceedingly painful to the tooth in which it was placed. With regard to formagen there was no pain produced unless it was a mechanical pain as the result of pressure. He thought a little slur had been cast on the substance because it was what was called a secret preparation, and many practitioners objected to dealing with any preparation the constituents of which they did not know, but he would ask them whether they were able to state in fact what were the constituents of the osteos in common use. Although this substance was a secret preparation if it was valuable it ought to be used.

Mr. DOLAMORE said he had not used formalin, but had recently been reading an interesting paper by Bönnecken, of Prague, who had been experimenting with the substance for the last two years, and who gave one caution which Mr. Storer Bennett did not mention, namely: that after a time there was great risk of destroying the pulp. Dr. Bönnecken used a 5 per cent. solution in cavities which were by no means deep, and in a couple of instances, at any rate, he destroyed the pulp entirely. That led him (Mr. Dolamore) to think that possibly they might ascribe the value of formagen to the very small quantities of formaldehyde present, because, as he understood it, they were to use formagen for cases in which the pulp was exposed, expecting to save it in a live condition, and not to destroy it. It followed that a very slight amount of formaldehyde should be present.

Mr. J. F. COLYER replied, and the meeting terminated with the usual vote of thanks.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

The Fourth Ordinary Meeting for this Session was held in the Medical Institution, Mount Pleasant, on Tuesday evening, February 15th, at 7. 30 o'clock.

The PRESIDENT (Dr. Waite) was in the chair, and there was a good attendance of members.

The Hon. Secretary read the Minutes of the last meeting, which were confirmed.

The PRESIDENT made a sympathetic reference to the loss by death of one of the younger members (Mr. F. C. Dopson), and the Hon. Secretary was requested to send a letter of condolence to Mrs. Dopson.

Mr. R. M. CAPON exhibited models of the mouth of a boy, aet. 14, which showed that the upper arch was considerably larger than the lower, and as a consequence the upper bicuspid bit entirely outside the lowers.

Mr. E. A. COUNCELL described a case he had had recently, in which, as the result of a football accident, the patient had fractured the upper and lower left third molars and the outer wall of the second upper right bicuspid. The patient had received an oblique blow on the left side of the mandible.

Mr. GILMOUR showed a gold crown which contained the natural crown of the tooth cemented inside. The crown had been made by a dentist in Ireland and showed anything but expert workmanship. After being worn for about a year the gold crown came off, and with it the natural crown of the tooth. The tooth seemed to have decayed right across level with the borders of the gold collar.

In the same mouth were two bridges which had to be removed, and the teeth that were crowned showed the same ring of decay of considerable depth at the gum margin. One of the teeth on examination proved to have become thoroughly decalcified and horny, yet retaining its original shape. On testing there was a very distinct acid reaction in the mouth.

He also showed the crown of an upper six year molar, the roots of which had completely absorbed. The history given was that some ten years ago the tooth had been extracted by an American dentist, who had cleaned out the canals, filled them, and inserted a large gold filling into a crown cavity, and then replanted it into its socket. The patient did not remember having any trouble

immediately after the operation, and had not had the least pain or discomfort for years. It was removed because it had become too loose for mastication, when it was found that the roots had been completely absorbed and the crown was held in position by a few adherent fibres of the gum, or periosteum.

Mr. J. A. Woods brought forward models showing total absence of the upper bicuspid and the second lower bicuspid in a patient (man) aet. 33.

After a good discussion on the cases introduced the president called upon Mr. T. Mansell to read his paper entitled "Stray Thoughts." (see page 151.)

The paper was followed by a very full and interesting discussion in which Messrs. Waite, Rose, Bates, Edwards, Pidgeon, Gilmour, Dickin, Capon and Woods took part.

A vote of thanks to Mr. Mansell closed the meeting.

THE PRESENCE OF FORMALIN IN ALIMENTARY PRODUCTS.

UNDER the above title, A. Jorissen has collated the various reactions which may be employed for the detection of formalin in food-stuffs. He finds that some of the tests are so sharp that he has been enabled thereby to detect the presence of formic aldehyde where none has been added, but is formed naturally in the course of industrial processes or household treatment to which the food has been submitted. For instance, in kippered herrings and in smoked flesh, ham, &c., it can easily be detected, and that here the formalin is generated in the process of smoking may be proved by allowing a piece of filter paper, cotton-wool, or the like to smoulder under a bell-jar, and testing the contents. The most ready test for the presence of formic aldehyde is a crystal of morphine hydrochloride and 10 drops concentrated sulphuric acid on a porcelain dish. If formic aldehyde is present an indigo-blue colour quickly develops.

These results lead to two important conclusions: (1) It cannot be taken for granted that the detection of formic aldehyde in a food is due to the addition of formalin. (2) Formalin appears in some instances, at least, to be the natural preservative developed in old and recognised processes of curing and preserving foods liable to rapid decomposition.—*Therapist*.

THE DENTAL RECORD LONDON: APRIL 1, 1898.

FORMALDEHYDE CEMENTS.

THERE seems a probability of the market being flooded with a number of formaldehyde cements, that is to say, of cements called by various names, but which in fact are either phosphate or chloride of zinc cements, containing a minute amount of formaldehyde; or else compounds of a porous and neutral nature containing this small quantity of formaldehyde mixed with other anæsthetic and germicidal drugs. The latter scarcely merit to be called cements, since they possess little or no power of hardening, and must be used much in the same way as the well-known and useful "artificial dentine" prepared by Fletcher. For the moment the one which is best known is that prepared by Abraham, and called by him "formagen.?" His object was to produce a spongy cement which would absorb any fluid or gases given off by the pulp, and be impregnated with an anæsthetic (carbolic acid and eugenol) and small quantities of formaldehyde which, the cement being porous, would gradually come in contact with the pulp tissue, acting as a non-irritant germicide. The name given is suggestive of a formaldehyde producer, but this, in the true meaning of the term, Abraham does not claim it to be. It yields no more formaldehyde than was originally incorporated in the mixture, probably less, since some will probably remain in the "cement," and so hardly be available for practical purposes. The idea that it is really a generator of formaldehyde has doubtless arisen from its name, and also from placing an interpretation on the meaning of the directions, sent with the preparation, which may not have been intended. Formaldehyde, whilst it is a most powerful germicide, is also an equally powerful irritant, and to obviate this latter action but very minute quantities of the

drug have been added to the compound. In one quantity of the preparation placed upon the market, which proved to be of an irritant nature, it is said that Abraham admits it to have been too largely impregnated with formaldehyde, owing to the generator being overheated. There being but a minute quantity of this drug present, and as it is volatile, it follows that when the preparation has been kept for any period, especially when the bottles have been left uncorked, the formaldehyde is likely to be most conspicuous by its absence. Abraham and most of those who have most used the drug and recorded their results have employed it in precisely those cases, in which, but a few years ago, it was the fashion to cap the pulp, using, not, of course, a preparation of formaldehyde, but some of those thousand and one things which were then so largely advocated. It will be remembered that the result of this treatment was then claimed to be quite as satisfactory as is now alleged follow to the use of formagen. A prolonged experience, however, showed that the writers "had hollaed before they were out of the wood"; anyway, we believe we are justified in saying that the uncertain results of pulp-capping has caused it to fall largely into disuse except in a few cases, such as traumatic pulp exposure, in which the healthy condition of the pulp is beyond dispute. It is far too early to say whether a like result will attend the use of formagen and other formaldehyde cements. There is reason, considering the powerful nature of this germicide, to hope that it may not, but it does not seem superfluous to suggest that those who use this method as a routine method of practice do so without in the least knowing the ultimate results. We confess we find it difficult to understand how formagen, which is already fully moistened by the liquid used in its preparation, can to any extent soak up, as is claimed, that serum exudation which the pulp is likely, and expected, to give off. We may, however, remind our readers that Abraham advises mixing it as dry as possible, rubbing it between the fingers to incorporate more powder, and finally,

before placing in position, dipping the nodules in the powder to prevent them adhering to the instruments. It is claimed, and apparently believed by many, that the pulp under this treatment fully recovers its normal condition; but it would be well to remember that the pulp is extremely sensitive to injury, and though the consequent degeneration is slow—may indeed be a matter of years—its progress is sure and the end is a dead pulp. May be, perhaps, that under a dressing of formagen this end may not result; but so far the probability is that it is merely postponed, and of certainty we know nothing. It may be said, and with a good deal of truth, that if the result be a slow, absolutely painless death of the pulp, it is preferable to the rapid and often painful destruction, which follows the application of an arsenious acid dressing; nevertheless, if a large gold filling should need removal because of this result, it must, to say the least of it, be a vexatious matter: and we cannot believe that the trace of formaldehyde present in formagen can permanently sterilize and mummify the pulp in its entire extent; indeed, if this be anticipated the method advocated by Dr. Bönnecken, in the paper we present to our readers in this issue, seems in every way preferable. This remark applies also to the treatment of those conditions of the pulp in which it is already suppurating or putrescent. We have gathered from remarks made that formagen is being used in these cases, this appears to us to be likely to bring discredit on what may prove to be a useful preparation: it is not so used by Abraham nor by those others to whom we have referred, and as we have already said the plan advocated by Dr. Bönnecken seems in every way preferable. Pending the ultimate results of these experiments it would appear that our attitude should be one of profound interest but of caution. The dental profession, not less than its elder sister, the medical, is apt to be enthusiastic, but this enthusiasm sometimes leads it into methods of which in the fulness of time it slowly repents. And of these methods

quite a list could be given, but, to recall only a few, we may mention the use of celluloid as a basis for dentures, cadium in amalgams, venting roots instead of filling them, and among the many others the once almost universal method of pulp-capping to which we have already referred.

News and Notes.

THE 13th annual meeting in connection with the Glasgow Dental Hospital was held on February 25th. Lord Provost Richmond presided. The secretary, Mr. D. M. Alexander, submitted the directors' report. As was anticipated in last report, the falling off in the number of patients occasioned by the removal of the hospital premises was only temporary. The patients attending the hospital during the past year had been 5,492, as against 4,034 recorded in last report, being an increase, as compared with last year, of 1,458. The number of operations performed was 6,811, as against 5,897, being an increase of close on 1,000. Of the 6,811 operations 2,276, nearly a third, were preservative operations. The financial statement closed with the balance in bank and on hand of £169 7s. This satisfactory result was contributed to by a legacy of £100 received during the year from the trust estate of the late Mr. Peter Craig, and the bequest of £50 from the Bellahouston trustees, which they kindly renewed for the year. When it is kept in view, however, that the account opened with a sum in hand of £68 10s., it will be seen that, but for the special sources of income mentioned, the expenditure of the year would not have been met by the ordinary income. This is far from satisfactory, especially in view of the fact that the income from students' fees is this year £165, as against £135 received last year. The record of the hospital work during each year since its institution had increasingly justified its existence as a needed and useful charitable institution. The directors feel strongly that its maintenance should not be dependent on any precarious source of income, but should be assured by voluntary offerings of the citizens. The Lord Provost, in moving the adoption of the report, said it was of a most satisfactory character. It was a great pleasure to see that the hospital was in so good a financial

position. It was perfectly true, as the report pointed out, that this was largely owing to a source of income on which they could not always rely, apart from the ordinary income, but no one was to know that more money would not come to them in the same way. The report which was often given in connection with many institutions was that there was a balance on the wrong side of the account, and that an earnest whip up was necessary. All the same, institutions such as that should be able to pay their way irrespectively of bequests. The amount of work which was done was astounding to his mind, and the preservative operations proved that a great deal of suffering must have been alleviated among poor people who could not afford ordinary dentists' fees. Mr. J. R. Brownlie seconded, and the report was adopted. The following were elected directors:—Messrs. J. R. Brownlie, L.D.S., John Garroway and Robert Harvey. The proceedings terminated with the usual votes of thanks.

At the Strand Licensing Sessions, on March 24th, the Bench was asked by the London Dental Hospital to grant a license for the re-building of the "Duke's Head," which had formerly occupied a position on a site now purchased by the hospital. It appeared that the hospital authorities, desiring to extend their accommodation, had purchased a large amount of ground in the vicinity of Leicester Square, and wished to build their new entrance on the site of the "Duke's Head." The present application was for the re-building of the house a little distance away, and to cover a larger area. Mr. Hinde, barrister, and Mr. Pinhorn represented the London United Temperance Council, who opposed on behalf of some of the governors of the hospital, Rev. A. Mearns and others. The application was refused.

At the Bradford County Court, on March 15th, Mrs. Elizabeth Hamilton, of Beamsley Street, Manningham, sued Mr. Herbert Bairstow, chemist, of 264, Barkerend Road, Bradford, to recover a sum of 30s., the price of a set of artificial teeth. Mr. Last, who appeared for the plaintiff, said that as long ago as 1892 the defendant undertook to make a set of teeth for the plaintiff for a sum of £2 10s., and 7s. 6d. for painless extraction. The teeth were paid for and were supplied, but had never fitted, and after the woman had been "hundreds of times," to get alterations made, the defendant

had said that he was unable to do any more for her. The teeth were then taken by the plaintiff to another dentist, who said that they could not be made to fit, and supplied for 30s. another set of teeth. The plaintiff now sought to recover the amount paid for the second set. Mr. Durrance, who was for the defendant, said that the plaintiff was a member of a clothing club, and the contract for the purchase of the teeth was made with that club. The club, however, did not pay to Mr. Bairstow the whole of the money paid by the plaintiff. He contended that the first two years no complaint was made of the teeth not fitting, and that the first complaint was made after an illness which affected the shape of her mouth. The plaintiff said that this was not so, and the ailment of her mouth was partly due to "a bit of tin" on the back of her teeth. In the course of further evidence it appeared that the plaintiff had suffered for some years before and since the teeth were fitted from an affection of the throat. The defendant in his evidence, said that he was a chemist, but was not a registered dentist, though he had served an apprenticeship as a mechanical dentist. His Honour held that there existed a contract on which the plaintiff was capable of suing, and he gave judgment for the plaintiff for the amount claimed.

At the Lambeth Coroner's Court, on March 16th, Mr. A. Braxton Hicks held an inquiry with reference to the death of Albert Britton Bustin, 34 years of age, a Custom House officer, lately residing at 83, Appach Road, Brixton Hill, who died from the effects of swallowing his false teeth. Mr. William Henry Bustin, an artist, of Palace Yard, Hereford, said the deceased was his brother. The widow was so upset that she could not attend the inquest, her mother being dangerously ill. She had explained to witness, however, that on the night of the 7th inst., the deceased, who wore false teeth, had steak for his supper, and they went to bed at 9.45. At about midnight she was awakened by his sitting up in bed, patting his chest, and exclaiming, "Oh, my God, my God!" He asked for a basin and tried to vomit, at the same time requesting her to search for his teeth in the bed. She then dressed him, and he went to St. Thomas's Hospital. In reply to the coroner, the witness said his brother, who had been used to a seafaring life, and was reckless, was in the habit of sleeping with his teeth in his mouth, and he probably kept putting

off having the plate repaired because it did not cause him discomfort. Mr. John Francis M'Lean, house-surgeon at St. Thomas's Hospital, stated that the deceased came there at two a.m., and said he had a difficulty in breathing and swallowing, and had lost his teeth. Witness felt the plate in the throat. The deceased, who seemed all right, was well able to speak. Witness tried to extract them with ordinary forceps, but found that he would have to use more force than the patient could bear without an anæsthetic. The senior surgeon accordingly placed him under the influence of ether, and the plate and five teeth were extracted. The plate caused a wound in the throat which became septic, and caused death. The jury returned a verdict of accidental death.

IN the unavoidable absence of the Bishop of London the Rev. Canon Duckworth, DD., presided at the Fortieth Annual Meeting of Governors of the Dental Hospital of London, held at the Hospital, Leicester Square, on March 17th. The committee, in their report, which was unanimously adopted, regretted the necessity of calling attention to a slight falling off in the amount received from Annual Subscriptions, a diminution which they hoped might be due solely to the very unusual demands made on the public during the Diamond Jubilee year, and that their next report would show an improvement in this direction. The total amount received for the General Fund was £2,677 13s. 7d., including £109 7s. 6d. from the Prince of Wales' Hospital Fund, £109 7s. 6d. from the Hospital Sunday Fund, and £141 18s. from the Hospital Saturday Fund. The contributions to the Building Fund amounted during the year to £2,928 14s. 11d., including £577 5s. received from the Trustees and Members of the Managing Committee, in addition to their previous donations. The erection of the new hospital buildings has not progressed so far as the Committee wish, owing partly to difficulties with various public authorities (in meeting these difficulties they have to acknowledge much assistance from the Charity Commissioners), and partly to the advance in price of building material, and other unavoidable causes, rendering some caution necessary in incurring responsibilities; in the meantime the Committee have to deplore some loss on account of rents, the site having been cleared under a magistrate's order. The Medical Report showed that the

number of operations performed in the Hospital had increased from 19,255 in 1874, when the present buildings were taken over, to 57,654 in 1896, and to 62,512 in 1897, and the Committee thought that these figures alone should be sufficient to recommend the claims of the institution for increased help and support.

A SPECIAL session of the General Medical Council has been called to meet on April 5th, to elect a President and to consider the Midwives Bill. Sir William Turner is, it is said, considered likely to be elected, but his non-residence in London is considered a disqualification. Amongst other names mentioned is that of Mr. Bryant.

Mr. G. B. GORDON, in an article on "The Mysterious City of Honduras," published in the *Century* magazine for January, says :—"No regular burying place has yet been found at Copan, but a number of isolated tombs have been explored. The location of these was strange and unexpected—beneath the pavements of court-yards and under the chambers of houses. They consist of small chambers of very excellent masonry, roofed sometimes by means of the horizontal arch and sometimes by means of slabs of stone resting on top of the vertical walls. In these tombs one, and sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cerements had long since molded away, and the skeletons themselves were in a crumbling condition, and gave little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light concerning their private lives, namely, the custom of adorning their front teeth with gems inlaid in the enamel, and by filling. Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes, for all the tombs opened, from their associations with prominent houses, seemed to have belonged to people of rank and fortune. The stone used in the inlaying was a bright green jadeite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row, and inlaid with a little disc of jadeite, cut to a perfect fit, and secured by means of a bright red cement."

J. G. HARPER, writing in the *American Dental Weekly*, gives the following useful directions for tempering Swiss broaches. The proper temperature when elasticity is desired is stated to be 530 to 570° F. The difficulty is in producing the required degree of heat. The boiling point of glycerin is given as 554° F. Here we have a solution of the problem. Place the broaches in a test tube or small vial, pour in the glycerin and bring to the boiling point and keep it there a few minutes. Place the tube or vial on a non-conductor to cool slowly.

IN the Philosophical Transactions of the Royal Society, a paper has been published recently by Mr. Charles Tomes, M.A., F.R.S., dealing with the question of development of enamel, especially that of the tubular variety found in the marsupials. His research has led him to the opinion: "That each ameloblast gives origin to an axial prolongation of its own interior plasm. The ameloblast is not itself actually calcified, as was formerly supposed by many observers, myself included, but this fibrillar prolongation of its plasm does calcify; hence it seems probable that a single ameloblast gives rise to the whole length of an enamel prism, itself receding as the enamel grows thicker. In each individual fibre calcification goes on from without inwards, leaving, during the formation of the greater part of the thickness of the enamel, a central track, soft and uncalcified. Ultimately, however, as the exterior of the enamel is approached, the axial canal becomes smaller and smaller, and finally thins out to nothing, so that a solid prism is the result. This occurs earlier in the process in some marsupials than in others. The traces of calcification belonging to each fibre do not fuse completely with their neighbours, but a small amount of interstitial calcified material is poured out between them." Mr. Tomes considers that: "The facts that the tubes do not reach to the exterior of the enamel, even in *Macropus*; that the penetration is variable, even amongst the marsupials; that it does not exist at all in the wombat, and that the character reappears sporadically amongst other mammals, would seem to render the inference justifiable that striking, and in some respects anomalous, as the character is, it cannot depend upon any very radical difference in the developmental process from that which results in the formation of an ordinary solid enamel." "Once grant

that a manner of calcification, resulting in the formation of tubes, is the normal, and, indeed, universal procedure in the first instance, and that the differences are solely in degree, . . . then the difficulty of accounting for the occasional occurrence of tubes in human enamel . . . disappears, . . . it becomes simply the retention of a stage of development through which all alike pass, and which some retain and others do not." "I have come to the conclusion that the tubes of the dentine cannot, in the strictest application of the terms, be said to enter the enamel at all; it is true that the tubes in the enamel are continuous with those of the dentine at the point of junction of the two tissues, but those which lie in the enamel are wholly and entirely a product of the enamel organ, and cannot, therefore, be properly termed dentinal tubes." We have endeavoured, by quoting these few paragraphs from various parts of the paper, to convey an idea of one of the conclusions at which Mr. Tomes has arrived; but those interested in the question of the development and calcification of enamel would do well to study the paper, which is published by Messrs. Dulau & Co., at the nominal price of one shilling.

THE prizes of the National Dental Hospital were presented by Mrs. Victor Horsley, at the Queen's Hall, on March 14th. They included:—*Dental Anatomy*—Medal: Mr. J. C. Wing; Certificates: Mr. G. W. Storey and Mr. A. B. Poundall. *Dental Mechanics* (Theoretical)—Medal: Mr. H. Rose; Certificate: Mr. W. H. Must. *Dental Mechanics* (Practical)—Medal: Mr. L. W. Bennett. *Dental Metallurgy*—Medal: Mr. W. H. Must; Certificates: Mr. H. E. Laurence and Mr. L. W. Bennett. *Dental Surgery*—Medal: Mr. H. Tattersall; Certificates: Mr. W. H. Must, Mr. H. E. Laurence and Mr. G. W. Storey. *Operative Dental Surgery*—Medals: Mr. W. H. Must and Mr. H. V. Tattersall; Certificates: Mr. J. Burton and Mr. H. Rose. *Dental Materia Medica*—Medal: Mr. W. H. Must; Certificate: Mr. H. E. Laurence. *Dental Histology*—Certificate: Mr. W. H. Must. *Ash Prize* (Value £3 3s.)—Mr. H. M. Griffiths and Mr. W. H. Must. *Entrance Exhibition* (Value £15)—Mr. W. H. Must. *Rymer Gold Medal* (for General Proficiency, value £5 5s., presented by Mr. Alderman

Rymer, J.P.)—Mr. W. H. Must. The Dean of the Hospital, Mr. Spokes, presided, and said they had a very successful year, all their students except one who went up for examination having received their diplomas from the College of Surgeons. After the presentation, Mr. Victor Horsley, in acknowledging a vote of thanks to his wife, congratulated the students on the brighter prospect that now existed for the dental profession. The sense of the necessity for a broader education had been aroused, and those who had taken advantage of the facilities now supplied would be the first to reap the reward. There were still a few even among his colleagues on the Medical Council who did not appreciate the necessity of surgical knowledge for a dentist, but this retrograde feeling was confined to a very limited number. The formal proceedings were followed by a concert, in which Mr. Franklin Clive, Miss Ethel Bevans, and Mr. Alfred Smith assisted.

THE members of the Dental Hospital Musical and Dramatic Society gave a Concert and Dramatic Entertainment on the 21st inst., at the King's Hall, Holborn Restaurant, in aid of the New Building Fund. The entertainment proved a great success, more than 400 people being present. The concert opened with an Overture by the hospital orchestra. A clever little skit entitled "A Trilby Couplet," written by Mr. Pink, Jun., was admirably acted, and very favourably received. Mr. Pink's *Svengali* was excellent. Miss Sybil Arundale must be specially mentioned. Altogether, the effort was a most laudable one, and one which reflects nothing but credit on all concerned.

THE next meeting of the Odontological Society will be held on Monday, 4th April, at 8 p.m., when a paper will be read by Mr. William Rushton on "The Use of Guttapercha in Conservative Dentistry." Casual Communications will be read by Mr. S. K. Apthorpe:—(1) Antral Empyæma with Ear complications; (2) Fracture of Upper Left Central Incisor and loss of the Right Central in a patient of 10 years, and by Mr. Charles West:—Abnormal retention of Temporary Teeth combined with Dichotomous Digits.

THE National Dental Hospital held a very successful and well attended Smoking Concert, under the presidency of Dr. George Cunningham, at the small Queen's Hall, on the 19th ultimo. The programme was a strong one, as will be gathered from the fact that such well-known artistes as Mr. Hermann Vezin, Senores Arbos and Rubo, Mr. Fred Russell (the Ventriloquist), Mr. Bob Rae, and Mr. F. Hooke were among the contributors. The Concert Committee, Messrs. L. W. Bennett, H. M. Griffiths, W. H. Must, H. Rose, and the Honorary Secretary, Mr. F. M. Farmer, are to be congratulated upon the result of their efforts.

THE ACTION OF SALIVA ON BACTERIA.

TRIOLO (*Rev. d'Igiene e di Med. Prat.*, An. 2, N. 12, Naples) has reinvestigated the above subject by new methods. Having first thoroughly disinfected the mouth with corrosive sublimate 1 in 1,000, or permanganate of potash, and then washed out with distilled water until no trace of the germicide could be detected, the saliva was taken fresh from the mouth, and its effect observed on various germ cultures. The result showed that the saliva possessed decided bactericidal properties, killing old cultures (five days) and diminishing the number of recent ones (eighteen hours). Saliva filtered (as in Sanarelli's experiments) has very little germicidal action. Very little difference was observed between parotid and submaxillary saliva as regards their action on germs. Indeed, the author believes that the chief germicidal action of the saliva must be attributed to the secretion of the muciparous glands of the mouth. A short bibliography is given.—*British Medical*.

SOFT SOLDER FORMULAS.

"FINE soft solder" is composed of two parts of tin and one of lead, and melts at 340° F. Ordinary soft solder is composed of one part tin and two of lead, and melts at 441° F. Tin two parts, lead two parts, bismuth one part, melts at 229° F.; tin three parts, lead five parts, bismuth three parts melts at 202° F. All the bismuth solders are more or less pasty, and seldom flow nicely with any flux in general use.—*The American Dental Weekly*.

THE DENTAL RECORD.

VOL. XVIII.

MAY 2ND, 1898.

No. 5.

Original Communications.

NOTES ON EXTRACTION OF TEETH.*

By E. J. M. PHILLIPS, Hon. Treasurer of the Society.

MR. PRESIDENT AND GENTLEMEN,—I have had some difficulty in deciding upon a suitable subject for my paper: Dental Surgery comprises a wide field, and a great part of it is of such a practical nature that demonstrations are more instructive and interesting than a mere discourse, and some of the papers we have had have dealt with important points in dental surgery. However, I thought I could not do better than make a few remarks on some points in the operation of extraction. I am well aware that it is impossible to introduce novelty, and shall carefully avoid unnecessary reference to ordinary details in the operation. In a general way extraction is so simple that I fear it is hardly looked upon as a surgical operation by the public, and yet it is one of the most frequent, and one from which a more widespread relief is given than almost any other, though of course it is not attended by the same wonderful results, nor does it involve the same risk to life that so many of the more important surgical operations do—though we must not lose sight of the fact that at times dangers to life do occur, and in most unpleasant and unexpected ways. Before going further it may not be out of place to state some of the more important reasons for extraction and circumstances which should guide us in our decision to operate. These are to relieve pain which cannot be cured by other means: to remove a cause which might lead to some more serious disease, such as cancer or ulceration of the cheek, lips or tongue; abscess which threatens to point in the face or burrow long distances; to necrosis of bone; to rendering the act of mastication

* A Paper read before the Liverpool Odontological Society.

difficult or impossible ; to trismus, or where many unhealthy and useless teeth or roots are concerned to the establishment of chronic dyspepsia ; there are many other reasons of course which it is not necessary to mention here. We may then consider the bearing that age, constitution and health may have on the operation ; for instance, in young children, when it becomes necessary—which happily it does not often, considering the prevalence of dental caries—to extract, great care has to be employed in order to avoid removing a permanent successor, which may happen under either of the following conditions : first when extraction has to be performed before the roots of the temporary tooth have commenced to absorb, or secondly where even if they have done so there has been much inflammatory mischief and the contents of the alveolus have become glued together—if I may use such an expression. A little later in life, say, from six to twelve or thirteen, there are cases when the septa of the alveolar process may be absent or only imperfectly formed, and when the alveolar dental periosteum is extremely tough and very firmly attached to the teeth and gums, under such circumstances we may be called upon to extract, say the first permanent molars, there having been no previous inflammation ; I have known a case such as this, when on removing the first left lower permanent molar, the second one being only just erupted, they both came out together, here the forceps (hawkbill) were most carefully applied to the first molar and never left it, the tooth came out without any trouble and with but little exercise of force, but, as I said, the second molar came with it and so firmly attached by periosteum and gum that they had to be cut apart ; they seemed to have occupied one common alveolus, with but little septum ; in this case replantation was performed, but was not successful. The moral is, in extracting a tooth next to a partially erupted one, to keep a finger or thumb as the case may be on the latter, so that if it shows any signs of displacement it can be held in position, or the operation suspended until the soft parts between the two have been cut through. It is worthy of note, as showing the toughness of a young and healthy periosteum, what I am sure you must all have met with, viz., in the extraction of a tooth which has a fine and curved root or roots, most commonly a first permanent molar, the end of some root fractures, but the separated portion has come away hanging to the other part of the root by the periosteum.

At this age, viz., childhood, or early youth, the alveolar processes are as a rule very yielding, and on this account we are often enabled to remove teeth with widely divergent roots which would undoubtedly break later in life ; but there is a danger here also, for at this period the alveolar plates are undergoing rapid growth, and their attachment to the tooth roots by means of a tough and healthy periosteum is such that in some cases, unless great care is taken, a considerable portion of the bone may come away with the tooth, especially in the first upper permanent molars, or in those most unusual cases where we have to extract the upper canine tooth, and this is one of the many reasons why instructors should make the student understand that when extracting a tooth he should never take his eyes off it, and indeed should, as he can easily do, always have a finger and thumb on the gum on either side of it, especially if it is more resistant than normal. Before leaving the young patient, I may just remark that when using the elevator, that most simple and useful instrument, we should, if possible, avoid making a developing tooth into a fulcrum ; the alveolar process, or even a finger or thumb of the operator may in most cases be sufficient for the purpose. I may now pass on to the adult. Here we have a different state of things ; the alveolar processes have attained their full growth, and in healthy subjects absorption has not yet commenced, the result is that the bone is firm and hard and closely embraces the teeth at their necks, and this it is which sometimes leads to difficulty in extraction ; given a solid, resistant alveolar process firmly gripping the tooth round the neck, and one of those teeth which have become much softened throughout the crown but with the roots hard and flint like, or on the other hand a tooth not much damaged but with widely divergent or abnormally formed roots, then, if unfortunately a fracture takes place, as it may even with the most skilful operator, using the greatest care, we have at once a transition from a simple to what may be a very difficult operation, perhaps calling for the separation of the roots by means of suitable forceps, or with a burr in the dental engine, or, as some advocate, by trephining the alveolar plate ; there are of course cases where if only a small end of root fractures it is better to leave it alone as the attempt to remove it might lead to much injury to the surrounding parts, and in most instances such small bits cause no trouble and in time find their way to the surface. Where it does seem desirable to remove the broken

end I have sometimes done so with perfect ease, in the case of molars, by burring away the interalveolar process or septum ; when using burrs for such purposes it is of the utmost importance to have them perfectly clean.

Perhaps the most common and difficult teeth to extract are misplaced and impacted third lower molars ; here we have conditions not met with in other parts of the mouth, viz., in place of the thinner and more or less yielding bone found elsewhere, we have solid and perfectly unyielding bone, and in some cases the tooth is implanted in the base of the ascending ramus of the jaw ; also the tooth, which should have two, may have from one to four or more roots, some or all of which may be much bent, generally backwards. In most instances the forceps are of little use and the value of the elevator is appreciated ; there are various forms of elevator, but the one I hand round is the pattern I prefer, it is straight, has good penetration, and the point and edges are such that they can easily be kept as sharp as is necessary ; the advantage of the straight elevator is that you always know where the point is and there are very few occasions in which it cannot be used. When operating with this instrument I like to stand for right side teeth on the patient's right, and for left side teeth in front ; in these positions I can more easily use my left hand for guarding the tooth and surrounding parts. There are still two conditions which may give rise to difficulty during extraction which are worth noting : the first is germination, which is well shown in this specimen, which I became possessed of in the following way—About two years ago I had to extract a number of sound but loose and useless teeth for a patient, two being the second and third right upper molars. It is my usual custom to begin at the back and work forwards, but in this case, on account of the abnormal position of the third molar, I proceeded to extract the second first, when I noticed that the third moved with it ; I was careful, but still proceeded, and both came away together, when I found what you see now—a very perfect specimen of true gemination ; I mean not one of those unions sometimes met with due to cemental hypertrophy, the result of chronic disease. If this patient had, when all the teeth were firm, suffered from caries of the third molar, whoever might have been unlucky enough to attempt its extraction would have been certain to meet with one of three disasters : have failed to extract, have broken the tooth, or have removed both,

any one of which accidents would have been possible in the most skilful hands, and have been a cause of much distress both to patient and operator. The second condition is that of Radicular Odontome, described by Bland Sutton as Aberration of the papilla, and classified as (*a*) Radicular dentoma (*b*) Radicular osteo-dentoma (*c*) Radicular cementoma; in the first dentine is the principal constituent, in the second osteo-dentine, and in the third cementum. I have never met with one of these myself, though I have with some of the other forms, but a case happened to a friend of mine, now dead. He attempted to extract a right lower first molar for a young lady; the tooth had caused pain, but at the time there was no particular swelling. It was very resistant and at last the roots fractured, a portion of them coming away with the crown. There was no suspicion of odontome, and it was thought best to leave the broken end alone, so the patient went away; later on pain of a variable degree commenced and more or less swelling, accompanied by a discharge from the socket; this, I believe, continued for about ten years, when, at last, I suppose after the surrounding bone had become absorbed, the odontome which I have brought was cast off, the patient gave it to my friend, who presented it to Prof. Rushton Parker, who some years ago gave it to me. I may now pass on to extractions later in life, say, from 55 onwards. At this period another change has taken place in the jaws, the alveolar processes have not only long since ceased to grow, but have on the contrary undergone more or less absorption, and any remaining teeth may be moveable and not suggestive of any difficulty in extraction; but this is not always the case, for we find now and then that though the thin alveolar process has wasted the implanted portion of root is surrounded by dense bone, and often the end of the roots are enlarged by exostosis, so that a ball and socket joint is formed and extraction is by no means easy. We now have to consider a few conditions of constitution and health in regard to extraction: there are, of course, instances in which we would rather not operate, but I am speaking of those where we are obliged to; I have found that where for any reason patients have been taking mercury and are nearly or quite salivated, that not infrequently hæmorrhage at the time of extraction is very free, even making it necessary to adopt means to check it; such a case occurred to me some time since—the patient, a gentleman of middle age, who had been under a course of mercury, came to

have two right 'lower molars extracted, copious bleeding started at once, and continued to be so free that I had to plug the sockets with lint and turpentine, put compresses over and keep the patient in the house for more than two hours till all sign of oozing ceased ; after the removal of the plugs next day there was no bleeding, there was no history of hæmorrhagic diathesis. In all cardiac cases care should, of course, be taken to avoid shock, and this is especially impressed by some writers in aortic incompetence, as cases have, I believe, been recorded of fatal syncope following extraction under such conditions ; it is, however, now considered both justifiable and comparatively, if not quite safe, to extract under nitrous oxide if extraction is absolutely necessary ; thoracic aneurisms may be considered as coming under this head.

Another condition requiring care is where necrosis of bone has followed as a result of dental disease. If we have reason to suspect that the sequestrum is firmly attached to or entangled in the roots of a tooth, incisions should be made through the soft parts so that it may come away without injuring them. I have brought a specimen in which the roots of the first right upper molar had penetrated into the antrum, and were so adherent to a sequestrum in the floor of that cavity that tooth and bone were removed together.

Another very important constitutional state is that of the hæmorrhagic diathesis. I do not purpose to detail the causes of this condition, but only refer to it as it affects extraction. There are times when the tendency to bleed is not suspected till after the operation, at others we may be aware of its existence and yet obliged to operate : in such cases, if time allows, no harm can be done by a short administration of gallic acid or ergot and dilute sulphuric acid, though I am not prepared to say if it really lessens the danger, but it has been recommended and stated to be attended by success, and I have at times employed it. After operating I have usually kept the patient under observation for an hour or more, and have avoided, if possible, using styptics or plugs, for if they are not needed I think they do more harm than good. Unfortunately, bleeding in these patients is secondary, and usually does not come on till some hours after the operation, very frequently at night, so that when dismissing the patient I find it well to give a few plain instructions : simple diet, avoiding hot things and stimulants, also supply the patient or a friend with a number of bits of lint, triangular in form, from two and a half

to three inches long, half to three-quarters of an inch wide at the base and tapering to a point, and direct that if bleeding comes on one or more of these shall be squeezed out in turpentine, the clot gently wiped out of the socket with clean cotton on a suitable instrument, and then sufficient plugs packed in, beginning with the apex of the plug; if there are teeth in the opposite jaw a pad of lint is to be placed over the plug, and then the mouth closed and the chin supported by a bandage or handkerchief passing over the top of the head, and the patient kept quiet and cool, and I am inclined to favour a semi-recumbent position, till professional assistance, if thought necessary, can be sought; if this is not necessary during the night, the patient should be seen within the next twenty-four hours; if there are no teeth in the opposite jaw a cork compress may be used, or digital pressure either by the patient or an attendant or friend. With regard to styptics, there are many as well as various forms of mechanical plugs, each of which has its advocate. They are all so well known that I need not mention them, and may dismiss the subject by remarking that the very last I should be induced to use is the perchloride of iron; it is apt to leave a dirty and more difficult surface to deal with after than we had at first. I have so far been fortunate in never meeting with a case that could not be controlled by simple means; those very serious instances, of which quite a number are recorded, where all ordinary means have failed and vessels have had to be ligatured, of course pass into the hands of the surgeon, and do not call for remark here. I now come to what I may call an important physiological condition, in which care is necessary when a tooth or teeth have to be extracted, viz., pregnancy; it is a common thing to be consulted by patients in this condition, and generally they express some anxiety and fear lest the operation may be followed by undesirable results, which is natural enough; it is therefore as well before doing anything to consult the patient's medical attendant as to when and how the extraction shall be performed. I do not think that in the majority of cases it matters very much, for if the preceding pain has been very severe or so severe as to call for operation, that the momentary added pain multiplies the risk of miscarriage or abortion, which appear to be the objections; and if an anæsthetic, such as nitrous oxide, is used, I believe the risk to be almost *nil*. As I mentioned before, I think we should always consult the medical attendant and so remove from

ourselves all responsibility ; also it is only fair and right to him and the patient to do so. In all my experience I have only met with one doubtful case : here I extracted, under advice and nitrous oxide being used, a bicuspid tooth ; the patient was about the second or third month, everything went right, and there was no difficulty in the extraction, but in a few days—I am not sure if it was not within thirty hours—she had a miscarriage ; whether this was a mere coincidence or in any way connected with the operation or anæsthetic I cannot say, but it is well to be warned by such occurrences.

Before concluding, I should like to draw attention to a very general but quite erroneous popular idea in connection with extraction, viz., that if there is much inflammation, pain, or swelling, nothing should be done till this has subsided ; whereas it is quite the other way, for the greater the local trouble the more necessary it is to remove the cause at once, and so cut short the disease, no doubt the after pain in such circumstances is sometimes severe, worse, in fact, for a time than what has gone before, but it can generally be relieved, if not entirely subdued, and the patient saved perhaps many days of misery. I feel that I have already taken up quite enough of your time, so will only add that I have not attempted to go fully into the subject of extraction, such as the many difficulties, dangers, methods of operating and after treatment, which indeed could be made to cover many pages, but have simply tried to put before the meeting some more or less important points for debate, feeling that the subject, unlike some departments of our work, is one in which all must have had a large and varied experience.

A FEW NOTES ON MATRICES.*

By Mr. W. DE C. PRIDEAUX.

Mr. PRESIDENT AND GENTLEMEN : In briefly dealing at short notice with this subject, I fear my paper will be little more than an explanatory catalogue, and for this I must ask your forbearance.

Messrs. C. Ash and Sons, with ready kindness, have placed at my disposal for this evening examples of the matrices in general request, and we shall at least be able to inspect them at our leisure, and perhaps criticise them more than we should if we were on purchase bent.

* A Paper read before the Students' Society of the Dental Hospital of London.

Matrices are familiar to all as aids in filling interstitial and other cavities where temporary support is required, either as an aid and support for contouring, or by adding another wall simplify fillings to an extraordinary degree when used with care. The problem is to obtain exact conformity easily and securely, particularly at the cervical border, to the varying shapes of tooth treated.

For small cavities the simplest matrix is a strip of metal passed between the teeth and firmly fixed in position by wedges, these often being moistened by gum sandarac to aid in retention. Metal wedges are sometimes used. Mr. Darby introduced a double screw wedge, in which, by the rotation of a small milled head, a screwed bar approximates opposing wedges, these slip over one another, and, being slightly bevelled, hold matrix strip very firmly against cervical edge and tooth generally. It may be here mentioned that Perry separators may often be used to great advantage as matrix holders in this way.

For larger cavities a straight matrix is, of course, not desirable, and of those retained in place by wedging Dr. Lewis Jack's are highly esteemed; these are readily applied when there is a little separation; they may be described as rectangular pieces of thin steel, one side being roughened for ready retention of wedge, whilst that towards cavity is hollowed out and highly polished to allow suitable space and surface for contouring.

Mr. C. S. Tomes mentions this matrix firmly fixed for use in gold work, but states that most particular care must be given to condensing thoroughly with special pluggers at cervical edge and against matrix, little being available for loss in polishing; it is therefore most essential to have this surface left as perfect as possible by the plugger; some advise removal of matrix when cavity is about half full that a more thorough lateral condensation may be made than is possible with it *in situ*. There is said to be considerable risk of crumbling, and, in some cases, even fracture of enamel edge by the careless wedging of this matrix.

Ottolengui deprecates the use of matrices for gold, saying "it forms the gold so that it becomes impossible to properly polish it"; the closer a matrix fits the more marked this is, for no surplus filling is then available for loss in polishing, except at the expense of tooth substance: this, as he points out, is not of vital importance where cavity is next a space and can be readily polished.

He instances failure in experiments made by Dr. Marshall H. Webb and himself to obtain perfect surface straight away, even against glass, and sums up against matrices for gold generally, saying : " There is but one way to produce a perfect approximal filling, that is to obtain sufficient space so that the gold may be made to extend over all margins and bulge' beyond the normal contour, so that when all is trimmed away a perfect surface is produced at all parts, and of such contour that the teeth returning to normal position will knuckle. This is impossible with a matrix."

Of other partial matrices Mr. Woodward's may be mentioned, his semi-band of spring steel being a segment of a circle, and having two lips extending on opposite sides, about the middle of strip, one being bent at right angles to overlap adjoining tooth, and so avoid slipping in direction of gum edge, the other bent to reach and conform exactly to cervical surface ; a modification made by him dispenses with wedges ; two lugs tapped for screws are attached at either end of band, screws work through these, press against adjacent tooth and butt matrix band back towards cavity walls.

Herbst's are favourites for plastics, and may be described as two half bands, back to back, connected at one side, they are particularly useful for approximate filling, but care is needed in their removal, or fragments of the filling will flake off with them.

Of band matrices, Brophy's may be mentioned, they consist of a complete flat steel band, rather larger than the tooth ; the necessary adaptations and pressure being obtained by a screw working through a thickening or nut against tooth on the opposite side to cavity.

To mention *seriatim* the types lent by Messrs. C. Ash and Sons, we have the Herbst supplied in five sizes, as shown. The Ladmore Brunton is a very serviceable band matrix, and is supplied from the depôts with bands of varying length and width to suit requirements ; these have holes in each extremity and are threaded on the hooks of small parallel vice supplied, fitted accurately over cervical edge, then screwed firmly in position ; a wedge is, however, advised in addition to prevent slipping, for use with gold or tin fillings. It is wise to use the bands supplied as templates for duplicating before originals are lost or damaged. The Levitt matrix is supplied in three widths, it was brought forward at Paris, in 1889, and consists of a thin flexible metal band with a square collar soldered flat to the band at one end. The band is placed around tooth, the free end is

slipped through the collar, the band is pulled up tight round the tooth, and while still held tight the fore end is bent abruptly back, thus maintaining the tightness. In its favour must be said that it is removed by a movement from within outwards, and not from below upwards, thus avoiding the risk, often present, of damaging filling by pulling contoured portion off with matrix. There appears to be no provision for nice adjustment to cervical edge here. The same cannot be urged against Ivory's matrix: this pattern appears to adjust itself very easily and nicely to gum margin, and is, moreover, easily applied, tightened and removed. A matrix designed for use on front teeth is Rowney's. I have failed to obtain a specimen, but each matrix is made from models taken of the tooth to be treated before excavation, and by this method Mr. Rowney claims that restoration of natural contour is very easy; if once matrices are made. Another desirable matrix, although, I am informed, not in great demand, is Jeffery's, this, like Herbst's, may be described as semi-bands placed back to back, but having a longer and larger connecting bow, the ends being forced apart by a coiled spring on a wire mandril bring consequent pressure on teeth. In the foregoing matrices, almost without exception, a provision is made by increasing width and varying shape of band for covering cervical edge and approximating matrix as nearly as possible to conical shape of teeth; but I believe I am correct in saying that it has been reserved for Mr. Lennox, of Cambridge, to point out the correct method of cutting matrices to such a shape that when bent around tooth they shall conform well and closely both at the cervical and occlusal edges; it may be incidentally mentioned that for crowning teeth his method of cutting bands applies.

Mr. Lennox points out that as regards shape a tooth may be compared to a cone, and proceeds to say that, granting a cone wrapped up, and a band marked or cut around this wrapper of matrix width, then taken off and flattened out, it would be found to be a portion of a flat ring of definite radius; by experiment he finds that practically all teeth, whether bicuspid or molars, require parts of the same ring, only varying in their length, and that three sizes are usually sufficient to give ample scope for fitting any tooth in practice. He has a practical addition in a size stick or coned mandrel on which the matrix may be placed for forming up, on one end is a depression into which a portion of band may be pressed to

more intimately accommodate itself to depressions or grooves in tooth proposed to be operated on. One notices also a provision for wiring matrix in place so that clamp may be removed, whilst matrix is left for subsequent removal on amalgam having hardened. For further particulars I would refer you to "Some Methods and Appliances in Operative and Mechanical Dentistry," by Mr. R. P. Lennox.

Lastly, I must not forget to mention the use of simple steel strips, also the utility of the G. Silver polishing strips, especially for the insertion of osteos in front teeth, they may be placed interstitially, and the ends bent in opposite directions, taking the section of the letter Z, or with one end rolled up, to form a point of resistance, inserted round a tooth and retained in place by finger pressure.

A suggestion given by Mr. W. S. Nowell I have found very useful for strip and other matrices. Before inserting them vaseline slightly, wiping off carefully so that a mere film remains ; there is then no tendency for plastics to stick, and matrix may be removed without danger. We are told to draw these strips through a napkin, or over a hard surface, to straighten out after use as polisher or matrix, but two surfaces of ordinary ink eraser have been found superior, for the reason that they polish nicely as well as straighten.

In conclusion I would remind you of the remarks made by Messrs. Smale and Colyer, to the effect that matrices should invariably be used in approximal cavities for piastics, it being nearly impossible without their aid to insert good fillings in these situations. The filling should always be carefully trimmed after removal of matrix, especially at the cervical edge, and when thoroughly hard, polished with all care ; strands of silk are very useful, either placed for use at gum edge before filling, or used with a saw like movement afterwards ; strips of rubber dam, and in some cases very fine wire may also be employed ; but I must not further stray into the subject of finishing fillings, that, as Kipling might say, "is another story."

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ordinary monthly meeting of the above Society was held on the 4th ultimo, Mr. BOYD-WALLIS in the chair.

Mr. T. E. CONSTANT signed the Obligation Book and was admitted a member of the Society.

Mr. C. A. Malone, L.D.S. Eng., and Mr. William May, L.D.S. Eng., were ballotted for and duly elected members of the Society.

The Librarian (Mr. W. A. MAGGS), reported that a copy of "Oral Surgery," by E. W. Roughton, M.D., F.R.C.S., had been presented by the publishers, Messrs. Segg and Co., and Kirk's Operative Dentistry and the Dentists' Registers for 1896 and 1897 had been added to the library. Mr. David Hepburn had presented an interesting old engraving showing a dentist scaling a lady's teeth.

Mr. S. R. APTHORPE, in a casual communication, gave an account of two cases of antral empyema with ear complication, the patient in one case being a man of 50, and the other a boy of 9. The former came to Mr. Apthorpe in December, 1896, complaining of pain in and around the infra-orbital region. He found the right upper second molar was crowned. Two days later a very small discharge appeared, and the crowned root was removed under gas. A quantity of thick pus came away on the insertion of a probe into the antrum. About twelve days after the patient was seized with violent pain in the internal ear on the opposite side, but immediate relief was given three days later by a profuse discharge. The patient was in the habit of pinching both nostrils in order to empty the cavity of injected fluids, and it was believed that in so doing he must have forced some small foreign body into the opposite eustachian tube. A gradual recovery followed the opening of the antrum and syringing with boracic acid.

The CHAIRMAN remarked that it was of the greatest importance to have a trephine sufficiently large to irrigate a cavity very thoroughly, and it was also of importance in a drainage tube not to put it too high. It was a good plan to have a drainage tube of perforated platina. He also exhibited two small trephines specially made for him by the Dental Manufacturing Company of the size he preferred.

Mr. E. W. ROUGHTON was much interested in the case mentioned by Mr. Apthorpe, as it illustrated the danger to the middle ear of syringing through the nose, or through the mouth, and so indirectly through the nose. Many people he believed had given up the practice of forcibly syringing through the nose on account of the risk of middle ear trouble through the eustachian tube. He thought the explanation given by Mr. Apthorpe must be the right one, namely, that some septic pus or mucous was actually blown into the middle ear by the patient expiring forcibly while the nose was pinched. He was glad to hear the remarks of the Chairman in favour of large tubes, tubes of quite an eighth inch diameter or more should be used.

Mr. CHARLES WEST read notes and showed models of a case of dichotomy associated with dental irregularity. The patient, a youth aged 18, was somewhat cretinous, under 5 ft. in height, and had short arms and legs. There were nine temporary teeth in situ, the double rows of enamel being extremely unsightly. In the maxilla there were retained the two temporary canines, the right first temporary molar and second left temporary molar. The right first permanent molar was extensively decayed, as a consequence the model showed a large quantity of tartar. In the mandible the two temporary laterals, one temporary canine, and two temporary molars were present, and all the permanent series were erupted except the left bicuspid. The total dentition consisted of 34 teeth, 16 in the maxilla and 18 in the mandible. The boy had a congenital deformity, the thumbs of both hands being bifurcated.

Mr. F. J. BENNETT thought they were much indebted to Mr. West for his very interesting communication. All pathological conditions interested the members, whether connected with their own speciality or not. To him the special interest of the case was that there should be not only irregularity as to the number of teeth but that it should be associated with dichotomy or any other abnormality of the body.

Mr. W. RUSHTON read a paper entitled "The Use of Gutta-percha in Conservative Dentistry." He said gutta-percha probably consisted of hydro-carbon (pure "gutta") having the formula $C_{10} H_{16}$; "albane," a white resin, $C_{10} H_{16} O$; "fluavile," a yellow resin, $C_{40} H_{64} O_8$; and a variable component named "guttane." It would be noticed that the resins had practically the same chemical

formula as pure "gutta" plus oxygen. In the crude state it also contained foreign matter. The factor which made guttapercha so valuable in commerce was the hydrocarbon "gutta," which when pure, was a milk-white substance, becoming soft and plastic on heating, and hard and tenacious on cooling, without being the least brittle. The resins were accessory compounds due to oxidation, and they had a decidedly detrimental effect when they existed in too large proportions. It also contained a variable quantity of water. Guttapercha was chiefly obtained from a tree distributed over a well defined area including part of Borneo and the Malay Archipelago. The quality and quantity of the yield varied very much, depending upon the age and condition of the tree, the manner in which it was bled and the season. It would seem that, other things being equal, the smaller the percentage of resins in the specimen the better. Specimens differed very much, both in the percentage of "gutta" and also in molecular construction. A medium quality sample cleaned in the ordinary way gave the following results with and without resin: with resin, softening took place at 137.8; without resin, 195.9. The time taken to again become hard was, with resin, 17 minutes; and without resin, three quarters of a minute. The difference in the tensile strengths was five times as powerful as it was before the resin was extracted. These facts seemed to prove conclusively that the larger the proportion of pure "gutta" in the sample, the more valuable were its properties. The appearance of various samples also differed considerably, varying from brown to white. As a rule the whiter the crude gutta percha the more brittle it appeared to be. Guttapercha was insoluble in water, alcohol and dilute acids, and alkalies. It was soluble in chloroform, bisulphide of carbon, light petroleum, ether, and partially in essential oils. The best guttapercha was from superior samples obtained directly from the tree. Having explained the method of cleaning and mixing the crude raw material, Mr. Rushton referred to its early history, and then to its use as a filling material. Various preparations had been placed before the profession, and he proposed to deal briefly with the composition and characteristics of some which he had used in practice, and upon which, in conjunction with Mr. Ord, the chemist, he had conducted experiments. The prepared guttapercha he had examined were the so called base-plates made by Messrs.

S. S. White and the Guttapercha Company, Hill's, Jacob's George Pedley's, and Flagg's High Heat Guttaperchas. They were all guttapercha mixed with some mineral constituent to give colour and hardness. Red base-plates contained oxide of zinc and vermillion, Flagg's contained oxide of zinc, Hill's contained oxide of zinc and lime, Jacob's contained silica, Pedley's contained oxide of zinc and kaolin. When incinerated in a capsule and the residue weighed, the samples gave from 15 per cent. to 83 per cent. of ash, which was practically the amount of mineral added, as pure guttapercha only gave one-half to 1 per cent. of ash, and this had been ignored in the experiments which did not pretend to be anything more than fairly approximate. Jacob's contained the least proportion of foreign admixture when made according to the published formula; Flagg's, Pedley's and Hill's contained about four times as much, and they again varied in their characters as the two former set much more quickly than Hill's and were much more durable and tougher. Having described the method by which Jacob prepared his guttapercha stopping, Mr. Rushton spoke of the causes which caused guttapercha to deteriorate. The two most important factors were light and air, especially light. When guttapercha was exposed to a continuous current of oxygen it became slowly oxydised on the surface, and also became resinified and brittle; ozone, curiously enough, had no such action. This took place to a greater or less extent when exposed to the air and still more when exposed to air and light. But this resinification differed very much in various samples, the better class ones seeming to resist this change much better than inferior specimens. Reference was then made to the results of experiments on five samples of Jacob's Stopping which varied, to a great extent, though not altogether, in proportion to the amount of resin present in each. The value of this class of stopping depended on their toughness, the objectionable feature being the tendency to swell in the cavity after a time. The properties of Flagg's High Heat, Pedley's, Hill's, S. S. White's, and English "base-plates," were similarly subjected to careful criticism, and Mr. Rushton passed on to say that the characteristics of a good guttapercha stopping, in his opinion, were as follows: Firstly, it should be tough, so tough that the canine teeth have considerable difficulty in biting through it, it should be hard enough for the thumb nail to make but a slight impression on it, it should soften at not higher

than 175° fahrenheit, it should set in 30 to 45 seconds. When softened over a flame sufficiently to work it should not feel sticky to the fingers, and until it sets should feel resilient and not pasty when pressed. It should be of a suitable colour. As regards the preservation of the stopping, it should be kept in a receptacle impervious to light, it should have as small a surface exposed as possible, therefore pellets were objectionable. Most probably sticks wrapped in tin-foil and kept in a box would last indefinitely, pieces being cut off as required. He then gave what he thought was an improvement on any of the foregoing. Its utility depended upon the elimination of what had been shown to be deleterious in guttapercha, namely, the resin. The resins were soluble in spirit, pure "gutta" was not; therefore, if they dissolved guttapercha in any of its solvents, and treated the solution with spirit, they precipitated pure "gutta" and got rid of the resin. Pure "gutta" contained all the good qualities of good guttapercha in an enhanced degree, and, therefore, if they could utilise this substance to the best advantage they would be getting the most they could out of guttapercha. The two qualities in a guttapercha stopping ought to be toughness and hardness. The guttapercha gave them toughness, but it swelled; the mineral admixture gave them hardness, but it tended in excess to eliminate the toughness, which, in his opinion, was the best quality of the stopping. Pure "gutta" was so extremely tough and tenacious that it would bear a considerable admixture of mineral matter, which hardened it and controlled the tendency to swell in the mouth, without detriment to the stopping. It was also harder than guttapercha to start with, so that by using the following formula one got what was in his opinion the best of both qualities: pure gutta, 50 parts; finely levigated silica, 30 parts; oxide of zinc, 20 parts. The "gutta" should be gradually heated and the powders added in small quantities at a time. He found the best way to use it was to gently warm a portion sufficient to fill the cavity over a flame, then roll it in the fingers to an elongated shape the diameter of which should be less than that of the cavity. Then heat a round headed burnisher and press it to one end of the cylinder which would adhere to it. Then gently heat the stopping over the flame, taking care to heat the burnisher as little as possible; carry to the cavity and press home. The round head of the burnisher might easily be detached by rotation. If adhesion to the cavity wall were

desired, the stopping must be heated to a higher temperature, or dipped in eucalyptus oil, and the oil then volatilised by heat, leaving a sticky surface. In his opinion guttapercha stoppings should not be trusted to remain by adhesion but by judicious undercuts. To prevent dragging when the filling was being trimmed off, the trimmer should be made fairly hot, the filling being trimmed off towards the cavity wall. Accurate gauging of the amount of stopping to be used saved much trouble. Oil of eucalyptus or chloroform might be used if necessary to trim the edges. Guttapercha stoppings in actual practice were divided into temporary and permanent. The former should be easily introduced without pressure if necessary, easily removable, adhesive, and sufficiently durable to last a few weeks. This variety was useful for filling a partially prepared cavity, or for sealing dressings and drugs in cavities for short periods. Gilbert's preparation was a fair sample of this class, though in his opinion it set too rapidly. The word "permanent," as applied to guttapercha, had sometimes been objected to, and to a certain extent justly so ; but as far as his own experience went in certain situations it was probably the most permanent filling they could use. The drawbacks of guttapercha were its inability to maintain much contour ; some makes swell in the mouth and overlap the cervical edge, but wear well ; some did not swell but wear away. Its great advantage, however, was that it was a splendid tooth saver. He could not remember having seen a cavity in which a guttapercha stopping was placed—even though much worn down—in which, or round the edges of which, fresh caries had commenced. He knew of no other filling material to equal it in this respect excepting perhaps tin-foil. Added to this it kept a fair and inconspicuous colour ; it did not discolour the tooth ; it was an excellent non-conductor ; it could be easily worked ; it could be prepared in any shade of colour ; and it was easily tolerated. All were very glad when a patient presented himself with hard teeth capable of receiving a hard filling. But these cases seemed to be getting fewer, and the teeth so frequently presented for treatment were the soft bluish-white variety. In his opinion guttapercha was the conservative filling *par excellence* for weak teeth, temporary teeth, and senile teeth, either used alone or in conjunction with other fillings. In temporary teeth it was easily inserted for the child, durable, well tolerated, and easily removable ; while in senile

teeth it could be used freely in the rapid caries of old age, while the risk of displacement or rapid wearing was small in consequence of the muscles being more feeble. In conclusion, Mr. Rushton said that he felt very sanguine about the wearing qualities of "gutta" stopping, in addition to which a standard preparation was now capable of being prepared free from the variations which characterised guttapercha.

The CHAIRMAN said it had always occurred to him that guttapercha might be improved upon by the addition of india-rubber, which did not oxidise nearly so much. A compound of one part of guttapercha and two parts of india-rubber had none of the disadvantages of guttapercha. Then, again, he thought that with the addition of some antiseptic, such as hydro-naphthol, the disgusting odour which followed the use of guttapercha was done away with.

Mr. DENNISON PEDLEY said the great disadvantage he had always found with regard to the use of guttapercha was not its want of permanency, but its wearing away so rapidly and its change of colour. An interesting point with regard to the preparation of the guttapercha seemed to him to come from the method of preparation. It was very easy to give a formula of two of guttapercha and three of oxide of zinc and four of china clay, and so on, but the whole thing seemed to him to turn on the method of preparation. The method of preparation with regard to the guttapercha of Mr. George Pedley had been already published in his book on "Diseases of Children's Teeth." He had always been under the impression that by dissolving guttapercha in chloroform some of the value of the constituents was taken out, but he was very glad to hear from Mr. Rushton that that was not so. He should like to ask Mr. Rushton how, after he had precipitated the gutta, he incorporated it with the materials he advocated. With regard to the permanence of guttapercha, within the last week he had had one patient who had a mesial cavity in a bicuspid tooth, which his father filled 28 years ago. The stopping was somewhat worn, but it had effectually saved the tooth. Another case he had was a patient who had had a filling in the incisor tooth, which had been stopped by himself when a student some 14 or 15 years ago. The disadvantage of it was that it turned quite dark, and when he saw it he could scarcely believe that it was a guttapercha filling until he began to dig into it.

Mr. BALDWIN remarked that the guttapercha which seemed to him to be the best for all round permanent work, as far as it could be made permanent, was the red base-plate guttapercha of S.S. White. It seemed to be the most lasting and to retain its colour very well indeed. Being red it was of course not a natural colour for a tooth; but even in front teeth, if there was a very thin semi-transparent layer of enamel in front of it it did not look bad. It did not show dark, and the tooth was a very respectable one. There was something in it which prevented it taking on the brown dirty colour which most of the white guttaperchas took on in time. There was only one objection to the base-plate guttapercha, viz., that it was rather difficult to work. It required rather a high heat to soften it sufficiently and it had a tendency to be pulled out by the instrument with which it was packed. Those difficulties could be got over, first, by not using a ball headed burnisher, but an instrument which was practically a very elongated truncated cone, with a rounded absolute extremity. Another way to make it work was heating it thoroughly until it was perfectly soft, holding it under eucalyptus oil for some 10 or 12 seconds until it was sufficiently cold to insert it in the cavity. At that high heat the eucalyptus oil seemed to percolate into the guttapercha and soften it right through. If it was held longer it would become a slushy mass. There was yet another way of making it easy to work and that was by varnishing the cavity first with a solution of ordinary resin in chloroform which made an extremely sticky substance and stuck the guttapercha in like bird lime, even in a cavity which was not thoroughly dry.

Mr. F. J. BENNETT said the thing which appeared to him rather extraordinary was that there was the greatest possible variety in the amount of mineral matter combined with the guttapercha and yet there was no great variety in the wearing powers of guttapercha. He did not think the mere presence of mineral matter was a thing to be entirely relied on. There was one objection which had not been stated which practitioners ought to bear in mind, viz., that it tended to make the teeth irregular. The swelling of the guttapercha would often twist a lateral or a central out of position and was very disagreeable indeed in that respect. When it swelled if the teeth were originally tightly placed it would tend to swivel them round.

Mr. NORTHCROFT understood Mr. Rushton to say he was in the habit of setting crowns with the guttapercha that was used for impressions. He should like Mr. Rushton to be good enough to say how he got rid of the surplus that must sometimes occur under the gum, because in his experience that guttapercha was extremely tough and would be extremely difficult to remove.

The CHAIRMAN said the remarks with regard to the soluble things which were added to guttapercha sometimes was a very important one. He thought that anything added to guttapercha should be insoluble, such as glass or silica. The method he had been experimenting with was using two parts of india-rubber and one part guttapercha and some sulphate of antimony, and practically vulcanizing it by using very hot instruments. He had one case where it really became very hard and answered admirably. He used both sulphate of antimony and sulphur, two parts of india-rubber and one part of guttapercha. It did not create the pain one might imagine because the guttapercha was non-conducting. Whether that would prove useful still remained to be seen.

Mr. RUSHTON, in reply, said probably some substance might be found which would not act on guttapercha and disintegrate it in any way, but he had tried no experiments in that direction. With regard to the admixture of guttapercha and india rubber, rubber did not last as well as guttapercha, and he doubted whether it would be a very happy admixture; in addition to which it was much more elastic and resilient, and the difficulty of placing it in the cavity would be very much greater. Mr. Dennison Pedley had asked how it was incorporated. It was incorporated simply by warming the pure gutta on a slab and adding the powders in small quantities. With regard to the discolouration of stopping, he thought that guttapercha stopping containing resin would be more likely to discolour than those having simply the hydro-carbon. As regarded eucalyptus, he mentioned in his paper that he found a very good way when he required adhesion was to warm the stopping itself, dip it in pure eucalyptus, and warm it again, so as to just volatilise the eucalyptus and get an intensely sticky surface. Mr. Bennett's remarks were very interesting and very apropos. There were two main sorts of guttapercha, those containing a large quantity of mineral and those containing a large quantity of guttapercha. One swelled and discoloured, and the other did not swell but wore away.

He thought it wore away by the granules of the mineral being very lightly held together by the binding guttapercha, and consequently friction wore them away, which, if it had been tougher, it would not do. There was no doubt that the stoppings did vary in different mouths, and it depended, he believed, to a great extent upon the force of the bite, and to a large extent upon where the cavity was situated. He agreed that as a rule one stopping for two teeth was a bad practice; but in the mouths of little children as little as possible should be done, and sometimes by putting in a little tough guttapercha the teeth might be saved. With regard to setting crowns with eucalyptus and guttapercha, the crowns should be set first of all on a fusible metal nodule and the surplus guttapercha pressed out, and then when mixed with eucalyptus it became practically fluid. Mr. Boyd Wallace's idea about vulcanising guttapercha was one which had passed through his mind, but he did not think sufficient heat could be got with burnishers in the mouth to have a vulcanising action on guttapercha or guttapercha and resin. Of course it was no good theorising on those things; the only way was to try them. He knew nothing whatever about Caulk's hydraulic guttapercha; but from what he knew of guttapercha he should say that it was impossible for moisture to penetrate it in the way suggested so as to have any cementing action. Guttapercha was very impermeable to moisture. In conclusion, he thanked the members for the kindness with which they had listened to his Paper.

On the motion of the CHAIRMAN, the cordial thanks of the members were given to the readers of the papers and those who had taken part in the discussion, and the society adjourned till May 2nd.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

THE Fifth Ordinary Meeting for this session was held in the Medical Institution, Mount Pleasant, on Tuesday evening, March 15th, at 7.30 o'clock.

THE PRESIDENT (Dr. Waite) was in the chair and there was a fair attendance of members.

The Hon. Secretary read the minutes of the last meeting, which were confirmed.

The Hon. Secretary read the recommendation in favour of Mr. A. Drake as a member of the Society.

Mr. GILMOUR exhibited models (*a*) showing great irregularity in the upper incisors of a man *æt.* 20, who desired to have them regulated if possible, as they interfered with his speech to some extent; (*b*) showing a displacement of the right central in a girl *æt.* 26, by a small tumour, probably a fibrous epulis-growing from the septum between the central and lateral.

The President then called upon Mr. Phillips for his paper entitled: "Notes on Extraction of Teeth." (see p. 193).

The reading of the paper was followed by a discussion in which several members took part, and after a vote of thanks to Mr. Phillips for his interesting paper the meeting terminated.

DENTAL STUDENTS' SOCIETY, DENTAL HOSPITAL OF LONDON.

AN Ordinary General Meeting was held on Monday, March 14th, at 7.30. The PRESIDENT (Mr. H. Baldwin), in the chair.

Minutes of the last meeting were read and approved.

On Casual Communications being called for—

Mr. W. B. WOODHOUSE showed:—(1st) Models of mouth of a boy, aged $12\frac{1}{2}$, the two central incisors and the left lateral have not been cut, although they can apparently be felt through the gum. (2nd) Large abscess sac at root of lower stump. (3rd) Lower wisdom showing very extensive caries with large exposure of pulp; it had caused severe neuralgic pain for some time, but owing to the fact that only a third of the crown was erupted the condition of the tooth was not diagnosed till after extraction.

Mr. D. P. GABELL then showed (1st) for Mr. T. H. Vaughan, upper and lower models of a bootmaker's teeth, showing incisors much worn by the time saving habit of using brass brads from the mouth; the patient explained that his useful condition had only been obtained after some three years' constant wear, and that he was now able to eject brads without opening the jaws. Mr. Gabell mentioned a similar case that came under his own observation at the hospital, where teeth were so worn by hob nails that pulps were extracted and teeth fitted with gold. (2nd), for Mr. Garne, a model of an upper jaw, showing two very abnormal teeth, one in the place of the left lateral and the other between the centrals; both laterals were absent.

Mr. W. B. BLANDY exhibited temporary canine extracted from a woman, aged 32. it was loose and found to be absorbed at apex.

The only history was, at 22, the patient had a severe blow, knocking out her first bicuspid. Mr. W. B. Woodhouse remarked that he had seen the tooth in the mouth and that permanent canine could be felt.

Mr. PERKIN exhibited a second right lower bicuspid decayed uniformly around by use of band, the one on opposite side was loose, in the same condition, and had to be extracted. In both cases the decay was identical with shape of band.

After remarks by the President, Mr. D. P. Gabell and Mr. W. B. Woodhouse on the interesting Casual Communications,

The PRESIDENT (Mr. H. Baldwin) showed some fine platinum wire he had found very useful for retaining and supporting loose lower teeth, by lacing in and out between tight and loose teeth, practically "wattling" them—he had found no tendency to slip unduly towards gum edge. It favourably compared with other wire, even of larger gauge, regarding twisting strength and toughness, and might be useful in fractures.

The PRESIDENT then called on Mr. H. de C. Prideaux for his paper "A Few Notes on Matrices" (see page 200).

An interesting discussion followed. The President considered matrices a *sine quâ non* in combination fillings, and invariably used them; the molecular change taking place in amalgam on pressure during filling also pointed to their use; for gold work matrices were admissible for non-cohesive or tin, but not usually found advantageous for cohesive. Regarding matrix material, shape and clamp, tempered steel could not be improved on. Mr. Baldwin proceeded to give an interesting demonstration showing the ease with which matrices (cut on Mr. Lennox's plan) could be prepared from tempered pendulum steel with ordinary curved shears, punched and fitted to Ivory's clamp; hole should be nearer the concave than convex edge, thus insuring better adaptation. He advocated a sleeve arrangement to cover screw of small vice clamp supplied with Lennox and Ladmore Brunton outfit, to avoid gathering up of bibulous paper or substitute.

Mr. GABELL thought the Lennox a very good matrix, but pointed out that a tooth may be compared to a cone only to a certain point; he had found German silver matrices sufficient to stand any filling strain, he would avoid the use of Levett matrices altogether.

The PRESIDENT mentioned that the next meeting would be held on May 9th, and brought the meeting to a close at 9.10.

THE DENTAL RECORD LONDON: MAY 2, 1898.

WRITTEN AGREEMENTS.

THE Metropolitan Branch of the British Dental Association recently held an interesting discussion on the need and scope of agreements with assistants. Two opposite views seem to be held. First, that no agreement is needed between gentlemen; that honourable men will deal honourably one towards the other. Second, that a stringent agreement is eminently desirable even between men knowing and trusting each other, because, by it, when matters not unforeseen, but unexpected, arise each, being bound by his previous promise, will act according to this promise; they will agree and not disagree. We confess that our own feelings are in accord with the second view, and for two reasons. Firstly, memory is uncertain, and without a written agreement the recollection of what has been said and promised *viva voce* is apt to differ, even in the minds of two equally honourable men; rather, shall we say, the meaning of a sentence not thought out, written down and redebated, but hurriedly spoken and loosely constructed, may not convey that sense which the speaker intended. No attack, therefore, is made on the honour of another by requiring an agreement or signing an agreement; it is merely the action of two wise men seeking to understand each other. Secondly, an agreement, written and signed, is a deterrent from wrong doing. For the majority no deterrent is needed; but there are a few who may be tempted to step aside from the path of honourable action, and the fact that there is an agreement, which may enable public action to be taken, will possibly act as a powerful preventative.

But an agreement must not be lightly signed, it should be thought over earnestly. The contracting parties should know sufficient of one another to feel that they are likely to

agree and to work harmoniously. Thus it seems scarcely fair to ask an assistant to sign an agreement immediately on his entering upon his duties. He would be unwise to do so. A period of trial seems desirable, during which both parties will be able to form an estimate as to the probability of their wishing to continue to work together. The view most commonly held is that an agreement is chiefly needed to protect the employer from any interference with his practice by his assistant when the latter leaves him. This is a perfectly legitimate object, and eminently desirable provided the interference to be checked is seeking to attract another man's patients by undue means, such as the sending out of circulars, and so forth. But this is not the only object of an agreement. The assistant himself may well wish his duties and share in the receipts of the practice to be definitely fixed. If he be a permanent colleague, he might well ask to be allowed a refusal of the practice should it be sold, or of a partnership, should such be subsequently arranged. Indeed, there seems so many things, both on the side of the employer and of the assistant, which, for a continuance of good feeling, it would be desirable to absolutely define, that we feel convinced that an agreement should be welcomed as much by one side as by the other.

News and Notes.

AT a recent meeting of the Royal College of Surgeons, England, Mr. C. S. Tomes, F.R.S., was elected a fellow of the College under the rule allowing the election of members of twenty years standing. We most sincerely congratulate our *confrère* on this honour, in which the profession, of which he is so distinguished a member, seems almost to participate. Though this election comes somewhat too late to influence the appointment to the Medical Council, yet it shows that in the opinion of those qualified to judge, a dentist could be found whose knowledge of medical and surgical subjects would allow him to take due part in the deliberations of the Medical Council.

POSSIBLY before this appears in print the crown appointment will have been made public, but it may not be amiss to remark that should the appointment fall to the Birmingham nominee, and should, subsequently, this town obtain a University which would, we suppose, have its own representative, then Birmingham will have two representatives. Nice for Birmingham, but scarcely a fair division of the Council's seats.

WE have every sympathy with the desire to obtain more representatives for the general practitioner ; but when called upon to elect a representative he has hitherto not unfrequently elected to be represented by a consulting surgeon. Very excellent representatives they have been, too ; but the fact does suggest that the other consulting physicians and surgeons may not entirely misrepresent him.

A CYCLING paper states that the occasional soaking of rubber articles in a 3 per cent. solution of carbolic acid will prevent the rubber from becoming rotten. It might be worth trying this suggestion on rubber sprays, &c., things which we may not often use, and the rubber of which, in the meantime, frequently perishes.

Abstracts and Selections.

DENTISTRY IN FOREIGN COUNTRIES.

APPLICATION having been made to the Department of State for information as to the conditions governing the practice of dentistry in the various countries of Europe, and in the Hawaiian Islands especially, and the qualifications necessary for an American dentist, the diplomatic officers at the European capitals and the minister at Honolulu were requested to obtain the desired data. Their answers, in substance, are printed here for the general information of the dental profession of the United States. A note from the Mexican minister at Washington, in response to an inquiry from another source, as to the conditions in Mexico, is included in the series.

AUSTRIA-HUNGARY.—Replying to despatch of June 30 last, asking for information in regard to foreign dentists practising their profession in this country, I beg to reply that foreign dentists are practically excluded from practising in Austria ; the same general law which governs the practice of medicine applies to dentistry. Every medical doctor or dentist must have passed the regular examinations of the various Austrian state preparatory schools, university, and medical colleges ; no foreign diplomas of any kind are accepted as evidence of fitness in either profession. By this law any regular graduate of medicine may, if he prefers, practise dentistry without any further examination in that special branch of the profession. So far as I am able to learn, there is only one so-called American dentist practising his profession in this country, and he received a special permit to do so from the emperor, after having renounced his American citizenship and become a naturalized citizen of Austria. This special imperial permission allowed him to employ two assistants, without regard to their nationality.

LAWRENCE TOWNSEND,

Secretary of Legation.

VIENNA, July 29, 1896.

BELGIUM.—Foreign dentists are admitted to practise their profession in Belgium, provided they comply with the conditions prescribed in a royal decree of January 6, 1885.

All candidates, foreign or native, are required to pass an examination prescribed by the medical commission of the province in which they have resided during the two years that all such candidates must practise in the office of a regularly licensed dentist. This examination is announced in the *Moniteur Belge* a month before it is held. All candidates presenting themselves for this examination must be provided with a certificate showing that they have performed the preliminary two years' practise above mentioned. However, the Minister of the Interior and of Public Instruction may excuse from the production of this certificate any foreign candidate who has acquired the right to practice his profession in his own country.

JAS. S. EWING,

Minister.

BRUSSELS, August 25, 1896.

DENMARK.—I have met with much difficulty in obtaining the information desired as to practise of dentistry in Denmark for foreigners, for the reason that the ordinances and regulations are contained in several pamphlets, which are out of print and not on sale. But at length I have found copies and obtained leave to have them translated.

The general result is that dentists cannot practise in Denmark without a license, and such license cannot be obtained without passing an examination and a certain amount of service as assistant ; and the applicant is not entitled to such examination without certain educational certificates and proofs of good character.

JOHN E. RISLEY,
Minister.

COPENHAGEN, September 11, 1896.

FRANCE.—In reply to department instruction of June 30, asking under what conditions foreign dentists are admitted to practise their profession in France, and whether the conditions prescribe an examination or not, I have the honour to furnish the following information :—

According to Article 2 of the law of November 30, 1892, no one can exercise the profession of dentist in France if he is not provided with a French diploma of doctor of medicine or of surgeon dentist, issued by a superior medical institution of the state, after a certain course of studies fixed by the government and followed by public examination.

HENRY VIGNAUD,
Secretary of Embassy.

PARIS, July 16, 1896.

GERMANY.—On the receipt of the instructions of June 30 last, I addressed a note to the imperial foreign office, requesting, as directed, to be furnished with information as to the conditions under which foreign dentists are admitted to practise their profession in Germany. A reply to this note has now been received, and I have the honour to transmit herewith a copy, with translation, of the same.

EDWIN F. UHL,
Ambassador.

BERLIN, October 2, 1896.

[Translation.]

FOREIGN OFFICE, BERLIN, October 1, 1896.

Referring to the communication of July 18 last (F. O., No. 69), the undersigned has the honour to inform his Excellency the Ambassador Extraordinary and Plenipotentiary of the United States of America, Mr. Edwin F. Uhl, that no official permit is necessary for practising dentistry in Germany. Those persons, however, who wish to use the title of "doctor of dentistry," or another title of equal value, require, according to Section 29 of the Trade Regulation (as adopted July 1, 1883, Imperial Law Sheet, p. 177ff), a permit (approbation), which, with certain exceptions prescribed by the Chancellor of the (North German) Union in his proclamation of December 9, 1869 (Law Sheet, p. 687), can only be granted after passing an examination according to the regulations contained in the publication of the Imperial Chancellor of July 5, 1889 (central sheet for the German Empire, p. 417).

The regulations referred to, as well as another publication referring to this subject (central sheet for the German Empire, 1890, p. 81), are herewith inclosed.

HOLSTEIN.

GREECE.—In accordance with the instruction of the 30th ultimo, I have the honour to inclose herewith a statement of the conditions under which foreign dentists are admitted to practice in Greece. As soon as possible, I shall forward the regulations on the subject in force in Roumania and Servia.

All persons desiring to obtain permission to practise dentistry in Greece must submit an official certificate from a recognised dental school or from a recognised dentist, certifying that they have been instructed and are proficient in dentistry.

Their examination shall be conducted either in the Greek language or in a foreign language. The subjects of examination are:—(1) Anatomy of the mouth and of the jaw-bones; (2) Physiology of the teeth; (3) Pathology and therapeutics of the teeth; (4) Operations on the teeth, and (5) Mechanical dentistry. The examination fee is 20 drachmas (about 2 dollars and 30 cents), and the fee for a certificate of permission to practise is 10 drachmas (about 1 dollar and 15 cents).

Foreign diplomas are authenticated on payment of 400 drachmas (about 46 dollars) for the stamped paper required. Without

previous authentication of their diplomas, applicants from foreign countries are not allowed to present themselves for examination. It will be seen from the foregoing that all applicants, whether Greeks or foreigners, are required to pass an examination before permission to practise is granted, the only distinction made between Greeks and foreigners being that the diplomas of foreigners must first be verified.

E. ALEXANDER,
Minister.

ATHENS, July 23, 1896.

HAWAIIAN ISLANDS.—In reply to the instruction of June 30, relative to the conditions under which foreign dentists are permitted to practise their profession in the Hawaiian Islands, I have the honour to inclose herewith a copy of Chapter 72 of the Session Laws of 1892, which will furnish the desired information.

ELLIS MILLS,
Chargé d'Affaires ad interim.

HONOLULU, August 6, 1896.

Sections 1, 6, and 7 are alone given.

Section 1.—From and after the passage of the Act it shall be unlawful for any person or persons to practise dentistry in the Hawaiian kingdom except upon a certificate from a Board of Dental Directors.

Section 6.—From and after 60 days subsequent to the passage of this Act, the said Board shall issue a Certificate of Qualification to any person who shall present a diploma from a reputable dental college or who shall pass a creditable examination before the Board.

Section 7.—Any person or persons receiving certificates from said Board shall present said certificates to the Minister of the Interior, who shall record the same in a book kept for such purpose.

ITALY.—I have the honour to refer to the department instruction of June 30 last, on the subject of the admission to practise in Italy of foreign dentists, and to inclose accordingly herewith the copy and translation of a note which has been received to-day from the foreign office in reply to inquiries in the matter, together with the pamphlet referred to therein.

I beg to add that as there is no regular school of dentistry in Italy, some little informality in practice has existed, at least locally

in Rome, in permitting foreigners to follow their profession, and on presentation before the proper officials of satisfactory credentials the applicants have been told they might practise among the people of their own nationality. But lately there has been begun an agitation against the granting of even that limited privilege and for the strict enforcement of the laws, information concerning which is contained in the before mentioned note from the foreign office.

LARZ ANDERSON,
Secretary of Embassy.

ROME, August 4, 1896.

[Translation,]

MINISTRY OF FOREIGN AFFAIRS, August 3, 1896.

In consideration of this, foreign dentists, too, in order to practise in Italy, must be furnished with the diploma for physic and surgery, and, according to Article 33 of the above mentioned law, must have complied with the provision of Article 140 of the law of the 13th of November, 1859, with regard to public education, and which reads as follows :—

“Examinations passed and degrees obtained outside the kingdom will have no effect in the state, except by some special law. Nevertheless, those who shall have obtained degrees in any of the Italian universities, or in some foreign university of greater importance, and shall prove to have really undergone the studies and examinations required for similar degrees in the universities of the State, will be freed from the condition of passing the special examination, and will be admitted, without further difficulty, to the general examination for the degrees which they care to take.”

MEXICO.—Under date of June 3, 1896, Mr. Romero, Minister from Mexico to the United States, writes to the Secretary of State :—

In reply to your letter of the 1st instant, I have the honour to state that in order to practise the profession of dentistry in Mexico it is not necessary to previously undergo an examination, it being sufficient to have the proper diploma issued by a foreign dental college, and the certificate duly authenticated by the competent authority, in consideration of which that college has the legal power to issue such diplomas. Neither do the Mexican laws require the interested party to pass an examination in the Spanish language.

This has been the practice followed, but in case there may recently have been made some change of which I am ignorant, I will address the government of Mexico on this point, and, if so, I will have the honour to inform you.

NETHERLANDS.—Referring to department instruction, date June 30, 1896, relating to dentistry in the Netherlands, I have the honour to inclose herewith a copy of the laws of December 25, 1878, and of March 26, 1895, relating to the subject.

Articles 8 and 9 of the first mentioned law, a translation of which is annexed, prescribe the examinations to which persons desiring to practise as dentists in the Netherlands shall submit, and Articles 3 and 5 of the latter law, a translation of which is also attached, specify the foreign certificates or diplomas which permit a candidate to appear before the Netherlands examining committee for examination. The foreign certificates or diplomas thus recognised are the Belgian, German, British, French, Austrian, and Swiss medical diplomas, and the Belgian, German, British, French, and Swiss dental diplomas, in addition to those issued in the Dutch Indies, Surinam, and Curaçoa.

WILLIAM E. QUINBY,

Minister.

THE HAGUE, September 2, 1896.

PORTUGAL.—I have the honour to acknowledge the receipt of instruction dated June 30 last, addressed to Mr. Wilbor, in charge, and in reply have to state that an examination in the Portuguese language before the lyceum is imperative for all persons who desire to practise medicine or surgery in any of its branches in the kingdom.

This examination is duly certified to. The candidate is closely examined before the school of medicine, in the Portuguese language; in the case of dentists, in the anatomy of the head. Both of these examinations are rigorous. Once successfully passed, the candidate, upon the payment of about 60 dollars, is entitled to practise.

I inclose herein a digest of the medical law of July 13, 1870, still in force, bearing upon this subject.

GEO. WM. CARUTH,

Minister.

LISBON, August 12, 1896.

RUSSIA.—Referring to the instruction of June 30, I have the honour to transmit herewith copy and translation of Mr. Chichkine's note of September 11—23, and his accompanying inclosure of the law and regulations relating to the practice of dentistry within the empire for Russians and foreigners.

CLIFTON R. BRECKINRIDGE,
Minister.

ST. PETERSBURG, September 25, 1896.

[Translation of Mr. CHICHKINE's note.]

IMPERIAL MINISTRY OF FOREIGN AFFAIRS,
DEPARTMENT OF INTERIOR RELATIONS,
ST. PETERSBURG, September 11-23, 1896.

Mr. MINISTER,—In reply to the note of June 29th (July 1st) last, I have the honour to transmit herewith an extract of the laws of the empire containing the necessary prescriptions for Russian or foreign dentists who desire to acquire the right to practise in Russia.

I avail myself, etc.,

CHICHKINE.

Mr. CLIFTON R. BRECKINRIDGE, ETC.

[Translation.]

ARTICLE 93. No person, either Russian or foreign, who does not possess a diploma or certificate from the universities and Military Medical Academy is allowed to practise any branch of medicine or to practice as a veterinary in Russia.

Supplement to Article 596, Section Thir'd.—(Section 32.) Persons desiring the title of surgical dentist must have finished with success the studies at the medical-dentistry school and must undergo an examination by the examining committee of the university or Military Medical Academy.

Section 31. Persons desiring the title of dentist must present (1) a certificate, attested to by the local medical board, to the effect that the petitioners have studied dentistry for a period of three years with some well-known dentist, and that they have performed various dental operations on living beings with the proper skill and knowledge; (2) they must undergo an examination on the formation of the human skull, teeth, and gums, on the diseases the same are liable to, and on the means of curing by local means

being such as dentists are authorised to employ ; (3) they must also undergo practical examinations at the hospitals, and perform several dental operations on dead bodies and living beings.

SPAIN.—Under date of September 28th, 1896, the Spanish minister at Washington replies to an inquiry from the Department of State as follows :—

In reply to your esteemed favour of the 26th of June, inquiring under what conditions American dentists are admitted to practise their profession in Spain, I take pleasure in inclosing a copy of the decree regulating the matter, which was recently forwarded to me from the proper department at Madrid.

You will no doubt notice that the contents of said decree refer chiefly to the medical profession, but dentists are admitted to practise under the same conditions as medical doctors.

The decree in question, dated February 6th, 1869, provides that foreigners may enter the universities and other educational institutions of Spain on the same terms with Spaniards upon submitting to the rules in force. Persons who may have obtained academical degrees abroad may be admitted to the same examinations as those to which Spaniards are subjected, provided the authenticity of the degrees is established. The fees are the same as those paid by Spaniards. After having received a Spanish degree, foreign physicians must submit to the regulations decreed for Spanish physicians. Article 6 says : "To practise the medical profession, it shall suffice to present the degree acquired in a foreign public institution and to pay two hundred escudos on obtaining the authorization, which shall be given on receipt of the certified degrees." Article 8 provides that the foreign decree must be one that is recognised as valid in Spain. Application must be made on stamped paper, addressed to His Excellency the Minister of Public Works, accompanied by the original degree and a translation of it into Spanish made by the interpreter at the Department of Foreign Affairs.

SWEDEN.—The surgeon-general informs me that Swedish citizenship is required for every one wishing to practise a profession in Sweden, but there is nothing to prevent surgeon dentists wishing to practise under the rules imposed upon Swedish dentists, addressing a supplication to the king, stating their intention of becoming

Swedish citizens. Applications must always be accompanied by certificates, and the applicants must pass the regular examination.

The surgeon-general informs me that there have been many such applications presented, but he could not recall a single instance of permission having been granted.

There has been, as yet, no compilation of the laws relating to dentistry in Norway, but I understand that one is in the course of preparation, and, if I can secure a copy will forward it later.

T. B. FERGUSON,

Minister.

STOCKHOLM, October 1st, 1896.

SWITZERLAND.—I have the honour to acknowledge the receipt of the instruction of June 30th, 1896, asking under what conditions foreign dentists are admitted to practise their profession in Switzerland, and whether these conditions require an examination or not. In answer to this enquiry, I have the honour to enclose herewith a copy, in the German language, of a paragraph of a communication recently received at this legation from Professor Dr. Courvoisier, president of the Federal Medical Commission of Switzerland. I also transmit to the department by separate mail five small pamphlets of printed matter,—one in German, the others in the French language,—which, I am advised, embrace all the regulations now in force in Switzerland applicable to the practise of dentistry by foreigners. From these and other sources I understand (1) that no foreign diploma is recognized in Switzerland; (2) that all foreigners desiring to practise dentistry must submit to a thorough practical examination and to the maturitats examination; (3) that all examinations must be conducted in the French, German, or Italian language.

The practical effect of these regulations is the exclusion of all, or nearly all, American dentists, as a residence of several years in Switzerland, or a regular course in one of their universities, would be necessary to qualify them to successfully pass an examination. In answer to the remonstrance raised by American dentists here against these regulations, the response is made that identically the same requirements are exacted of native practitioners.

JOHN L. PEAK,

Minister.

BERNE, August 6, 1896.

UNITED KINGDOM.—Referring to the instruction of the 30th of June last, in relation to the conditions under which foreign dentists are admitted to practice in Great Britain, I have the honor to inclose a copy of a note addressed by Mr. Bayard to Lord Salisbury on the 15th ultimo, together with a copy of his lordship's reply of the 1st instant on this subject.

JAMES R. ROOSEVELT,
Secretary of Embassy.

LONDON, August 5, 1896.

MR. BAYARD TO THE MARQUIS OF SALISBURY.

EMBASSY OF THE UNITED STATES,

LONDON, July 15, 1896.

MY LORD,—Referring to your lordship's note of the 23rd of July, 1889, relating to the condition under which foreign dentists are admitted to practise in the United Kingdom, I have the honour to inform your lordship that I am instructed by my government to ask whether the regulations referred to prescribe an examination or not, and if they have been in any way changed or added to since the date of the above-mentioned note.

I shall also be extremely obliged to your lordship if additional copies of all laws and regulations upon the subject can be kindly furnished me, for the use of my government.

I have, etc.,

T. F. BAYARD.

The Most Honourable The MARQUIS OF SALISBURY, K.G., etc

LORD SALISBURY TO MR. BAYARD.

FOREIGN OFFICE, August 1, 1896.

SIR,—With reference to Mr. Bayard's note of the 15th ultimo, making further inquiries as to the conditions under which foreign dentists are admitted to practice in the United Kingdom, I have the honour to state that the lord president of the council has been informed by the president of the General Medical Council, to whom the matter, being of a technical nature, was referred, that the provisions of sections eight, nine, and 10 of the Dentists Act, 1878, which governs the registration of foreign (and colonial) dentists with recognised certificates, imposes on the General Medical Council the duty of deciding whether the certificate entitles the holder to

practise dentistry in his own state (or colony), and whether such certificate furnishes "sufficient guaranty of the possession of the requisite knowledge and skill for the efficient practice of dentistry or dental surgery."

In accordance with this duty, the General Medical Council has decided to recognize only such certificates as are evidence of a course of study and examination in arts and in dental surgery not inferior to those of British dental practitioners.

As the result of an inquiry held by them in 1879 into the sufficiency of the degree granted by the various American dental licensing bodies who applied for recognition, the University of Harvard and the University of Michigan were recognized as bodies granting "qualifications" which entitled the holders to registration in the United Kingdom, and no other application was granted. But after investigation in 1893 by the education committee of the council, it was found that the curricula of these two bodies were not considered adequate to insure the possession of the necessary qualifications, and the council thereupon resolved that the recognition of the dental degrees of the two universities above mentioned should be suspended until further notice. Consequently, no foreign dental degrees are at present recognized.

I beg leave to inclose copies of the medical Acts from 1858 to 1886 (including the Dentists Act, 1878), of the report of the education committee referred to above, and a report of the same committee, which will show the course of study and examination required for British dentists.

I have, etc.,

SALISBURY.

—*International*.

HOW TO PURIFY WAX AND HOW TO MAKE BASE-PLATE WAX.

By DR. THEO. CHUPEIN.

A FAIR equivalent of base-plate wax may be made as follows :—Wax that has been used for taking impressions should not be used a second time for the same purpose unless it is purified. To purify the wax and cleanse it of foreign matter, procure a funnel and cut off the spout. Place an old, but clean, tomato can on your laboratory Bunsen burner, having half filled it with water. Put the funnel in

this, letting the edges rest on the rim of the can. Put the wax in the funnel and let the water in the can boil. The boiling of the water will melt the wax in the funnel, and all pieces of plaster, sticks, or other foreign matter will fall or settle to the bottom. When the wax is all melted, let it cool, then by slightly heating the outer edges of the funnel, the cone of wax will drop out. You can now cut off the small end of the cone, which will be found to contain all the impurities.

Now take another clean tomato can, and fill it one-third full of water ; place your cone of wax in it, and melt it by boiling the water. The base-plate wax will be made much tougher if some of the wax peeled from the paper—or card wax—on which artificial teeth come, is added. While the wax is melting, prepare a smooth round bottle of a size that will go inside the can in which the wax is being melted. Fill the bottle with iced water and cork it. Make a lather of soap and lather the outside of the bottle. Have still another tomato can half filled with cold water, and place this near the one in which the wax is being melted.

As soon as the wax is all melted, put out the blaze and dip your bottle into the melted wax. Remove it from the can of melted wax and dip it into the can of water. Plunge it again into the melted wax and again into the water, once more into the wax and once more into the water. These three dippings will be found to make the wax about the right thickness. If it is wanted thicker, one or two more dippings will accomplish this ; or if it be wanted very thin, one or two dippings alone may be found sufficient.

The wax may now be removed from the bottle by passing a knife around the bottom and down its side, when it can be peeled off, flattened, cut into square pieces and put away ready for use. The bottle is then ready for another dipping, and the process repeated until a sufficient quantity is made.

In melting the wax it should not be permitted to boil, as it would then be frothy and unfit for use. As soon as the wax is melted the blaze of the burner should be extinguished and the dipping begun. The dipping should not be continued too long, otherwise the wax becomes chilled by the ice water in the bottle, which would make the base-plate too thick.

It will be found that base-plate wax thus made is thicker around the bottom of the bottle than at the upper margin, because the wax

coats more at this point than it does above. This, however, is no disadvantage, as the thinner part of the base wax may be placed towards the back part of the model, and the thicker part towards the front, where the artificial teeth are mounted.

In the absence of card wax to toughen this base a little Venice turpentine added to the melted wax will effect the same object.

While base wax thus made may not be equal to the nice sheets the dentist purchases from the depôts, it will be found to subserve every purpose and save considerable in the course of the year. Besides this, the sheets furnished us are often *too thick*, and by having it thinner, for some styles of work, the base wax thus made will often be preferable.—*Dental Office and Laboratory.*

SOME NEW STUDIES IN CATHODE AND RÖNTGEN RADIATIONS.

Mr. A. A. CAMPBELL SWINTON, in a lecture before the Royal Institution, said :—The researches of Crookes and Röntgen have supplied us with a new eye, have given to nature a new light, and certainly to science a new problem. In the highly-exhausted bulb known as the Crookes tube we have a few billions of molecules of gas of which we know little. If we knew all we should understand the constitution of matter, but here we are certainly dealing no longer with aggregates of matter. When a current is passed through the tube a green fluorescent beam is seen to emanate from the negative electrode, and when a Maltese cross of aluminium is placed in this beam its shadow is clearly defined on the wall of the tube. If the tube be now surrounded by a coil in which an electric current passes, the shadow of the cross becomes smaller, and at the same time turns about its centre. A demonstration of this was given, and then followed a demonstration of the effect of a powerful magnet which is to concentrate the rays. When held over the pole of the magnet the tube must be constantly moved, or the glass will be penetrated, so great is the erosive action of the stream upon it. Pieces of glass are chipped off inside, but whether this is directly due to bombardment by the molecules or is a secondary effect due to heating is uncertain. A cathode ray electric lamp was next shown. In this there are two cathodes with concave surfaces, so that as the rays came off normally to the surface they may concentrate at a

focus. A piece of lime situated at this focus incandesces brilliantly. As the current used was an alternating one, the two cups served alternately as cathode and anode. A second piece of apparatus of the same kind containing a smaller piece of lime behaved curiously. Periods of brilliant light and darkness followed each other in regular succession. This appears to be due to the alternate absorption and giving off of the gas by the lime, a thing most unheard of among chemists. With the alternating current the light appears alternately on opposite sides of the ball of lime, which becomes bored through from side to side, showing with what accuracy the rays can be focussed. As to what cathode rays are, it is now almost universally accepted that the original theory of Sir William Crookes is the correct one. The other idea, namely, that the rays are currents of ether, is not supported by experiment. The theory that the molecules themselves are repelled from the cathode with very great velocity is, on the other hand, more and more strengthened. The condition of things in the tube was illustrated by taking a pith ball to represent a molecule and suspending it between the poles of an electrical machine. The pith ball travelled from pole to pole and back with equal velocities, but when one pole was connected with the earth the pith ball was seen to travel in one direction with very much greater velocity than in the other. So in the tube the positive electrode is practically earthed, and that is at least one reason why the molecules travel so much more rapidly in one direction than in the other. The probable arrangement of the molecules in the tube was shown by a diagram which represented the space between the cathode and anode, as well as the space behind the cathode filled with negatively-charged molecules and the positively charged molecules occupying the space behind the anode, and that around by the walls of the tube. This representation is justified by an experiment with a tube containing a vane, the position of which is alterable. When placed in the line of fire, the vane rotates in one direction, and, when out of the line of fire, in another. As the vacuum becomes higher the conical form of the stream disappears, and when carbon is substituted for aluminium or platinum, a luminous ring surrounding a bright spot is formed at the anode. In a still higher vacuum the rays come from the centre only of the cathode cup, and if this be of carbon, it also becomes luminous. When the luminous ring is deflected by means of a magnet, it

moves with the latter without a perceptible lag. On allowing the cathode stream to pass through a slit in the anode and then between the north and south poles of a magnet, it becomes dispersed, producing the analogue of a spectrum. This spectrum shows dark bands, which continuously change their position, never remaining constant. Photographs of these bands were taken with instantaneous exposure, and also photographs of their X-ray effects, it being found that the bands in each coincided in position. If the X-ray effect be dependent upon the velocity of the cathode rays the greatest effect should be produced by the rays that are least deflected, as these have the greatest velocity, and this, in fact, is found to be the case. The size of the cathode is important. An experiment was performed before the audience with a tube containing a large and small cathode which showed that while with the smaller cathode the bones of the hand and arm threw a well defined shadow, with the larger cathode no bones could be distinguished. The material for the anticathode, is also not without effect. Sylvanus Thompson has found that the best absorbers are also the best emitters. The usual way of altering the kind of rays produced has been to alter the degree of exhaustion, but it was now shown that almost any kind of ray can be obtained by altering the distance of the cathode and anode, and by altering their position in the bulb. X-ray photographs were shown which had been taken with the cathode in different positions in the bulb. The lecturer also showed a bulb containing a glass screen behind the cathode which could be moved up close to the latter or removed from it. It appears that the condition to be sought is that the supply of molecules to the cathode should be restricted; the more limited the number of molecules the more rapid is the discharge. This was shown well with a tube that was formed of a central spherical portion opening into a smaller cylindrical part; when the cathode was in the middle of the bulb the X-ray images were much fainter than when moved back to the mouth of the cylindrical part.—Mr. Swinton also exhibited some curves which he had prepared showing the effects produced relative to different positions of the cathode.—*Pharmaceutical Journal*.

RESPONSIBILITY IN ADMINISTERING AN ANÆSTHETIC.

A DISCUSSION has been carried on in a provincial lay contemporary upon the question who is responsible in practice for the conduct

of the administration of an anæsthetic? Several deaths occurred at a provincial hospital, and upon these the local press, it appears, commented. The question of such responsibility is, however, one which has a much wider interest and importance. Usually the patient admitted into a hospital is received by a resident house surgeon or medical officer, who examines his condition and reports to his superior, the visiting surgeon. When an operation becomes imperative, the latter decides upon it, and an administrator of the anæsthetic comes upon the scene. He may be a house surgeon, senior student, or a special officer, a member of the staff specially appointed to give all anæsthetics. Who now decides upon what anæsthetic is to be given, what method employed, and in extreme cases whether or not any anæsthetic shall be given? A hospital surgeon of long standing and wide experience, in commenting upon the subject, contends that these questions lie solely within the province of the surgeon in charge of the case, upon the ground that he, and he only, has the opportunity of studying the case, and so is the best qualified to sit in judgment upon the points at issue. Upon the other hand, a gentleman in general practice writes that, at least as regards a private practice, he considers the surgeon as the least competent, since the family doctor, he alleges, knows all about the patient, while the surgeon views him wholly from the standpoint of his surgical malady. Probably much may be said on either side. Certainly in cases when special anæsthetics are called in, the problem is more complex than when the surgeon calls upon a house surgeon to give chloroform, and also occasionally to assist him at the same time. If competent medical men, who devote themselves to the study of what is admittedly a large subject, and one not free from special difficulties and requiring some special training, are found willing to practise solely in the capacity of anæsthetist—and that such is the case is shown in the past by the valuable work of such men as Snow and Clover—it becomes a grave question whether or not they should be regarded as mere experts in the methods of giving an anæsthetic, and accepting no responsibility beyond that involved in the technique of their calling, or whether, on the other hand, they have a right to determine what anæsthetic is best in any given case under any given condition. It is urged on behalf of the anæsthetists, with some show of reason, that when an expert is called upon to give the anæsthetic, with him should rest

the onus of selecting an appropriate anæsthetic and the responsibility of giving it in such a manner as to impede as little as possible the manipulation of the surgeon, and afford the patient the greatest chance of getting safely through the operation. In all cases of special doubt or difficulty, a consultation between the administrator and the operator should enable the former to examine the patient and ascertain the surgeon's views and wishes.—*Lancet*.

ABSORPTION OF FOREIGN SUBSTANCES BY THE FAUCIAL TONSIL.

L. L. GOODALE gives an account of a series of experiments undertaken by him to determine whether or not infectious substances might be absorbed by the tonsils (*Jour. of Eye, Ear and Throat Diseases*, Jan. 1898.) Foreign substances were introduced into the crypts of more or less hypertrophied human tonsils which were subsequently removed. The substance (carmine) was introduced into the crypts for the reason that if absorption occurs at all, it would be more apt to be from through the delicate loose lining of the crypts than through the compact mucous membrane of the free surface of the tonsil. After excision, the tonsils were hardened in corrosive sublimate, embedded in paraffine, cut in series, and stained with hematoxylin and aurantia. The carmine was introduced in water solution through a blunt pliable silver canula. Twelve cases were examined: 2 immediately after injection; 1 after 20 minutes; 1 after 45 minutes; 2 cases after 1 hour; 1 after an hour and a half; 1 after 2 hours; 1 after 2 days; 2 after 5 days; 1 after 10 days. The two cases in which immediate excision was done showed no trace of carmine in the mucous membrane, and served as control cases. After twenty minutes, particles of carmine were found in lines extending from the crypts into the mucous membrane. The carmine lay directly contiguous to the leucocytes. In the other cases, extending the time to two hours, similar conditions occurred, the depth of penetration varying with the time intervening and the looseness of the structure. The distribution of carmine after penetration of the mucous membrane was between the follicles. Many polynuclear neutrophiles contained carmine particles. After five days the intercellular spaces on either side of the crypts were filled with carmine in linear arrangement. In the carmine infiltrated

areas leucocytes were more abundant than elsewhere ; many were filled with carmine, and many showed fragmentation of nuclei. Polynuclear neutrophiles were abundant in crypts and nuclear fragmentation was very marked. In the tonsils excised five and ten days after injection, similar conditions were found. The carmine was most abundant midway between the follicles. In sections stained for bacteria, careful search failed to show these and in no case was carmine found in the interior of the follicles organisms in the tonsillar tissue, except in the most superficial portion of the epithelium of the crypts. In one case, a carmine suspension in which a characteristic bacillus had developed was introduced into the crypts of a moderately hypertrophied tonsil, which was excised after two days. Although carmine particles were found in the interfollicular lymph spaces, no bacilli were discoverable below the superficial epithelium of the crypts.

The author concludes : (1) Absorption exists normally in the tonsil and takes place from the crypts. (2) The path of the absorbed substance in the interfollicular lymph spaces in the direction of the larger fibrous trabecular. (3) During the process of absorption, substances encounter phagocytic action on the part of polynuclear neutrophiles situated in and adjoining the mucous membrane. (4) Bacteria are normally present in the crypts, but are not ordinarily demonstrable in the tonsillar tissue. In view of these facts it seems possible that bacteria are continually making their way into the tissue, but at the moment of entering meet their destruction. Further, it is suggested that the inflammation of the tonsils may be due to absorption of irritant substances produced by the bacteria in crypts.—*Pediatrics*.

EROSION.

LATELY, Dr. Znamensky, of the University of Moscow, has published a paper on this subject which is worthy of all attention, as it seems to satisfactorily explain the cause of this affection. We are all aware that dentine is composed of organic matter—tooth-cartilage—impregnated by earthy salts. In caries we have the inorganic salts attacked by acids, and the organic cartilaginous matter subsequently destroyed by micro-organisms. But according to Professor Znamensky, in erosion we have the tooth-cartilage

first affected, the disappearance of the earthy salts being a secondary result. The process is, therefore, the reverse of that of caries. The investigator proceeded by removing the tooth-cartilage of extracted teeth by heating and boiling, and was able by prolonged boiling in a Papin digester to get rid of it entirely. The result of the boiling was that the tooth became soft and could be easily scraped with a blunt knife, while at the same time it became very fragile and crumbly. If the boiling was prolonged at a high temperature, the tooth broke up. The enamel was not much changed; it became, however, more brittle. If a boiled tooth was brushed by brush in a polishing lathe without powder an artificial erosion could be produced, varying in rapidity with the temperature at which it had been boiled. The enamel strongly withstood the action of the brush, so that the dentine could be removed from under it, forming the undercut appearance so often noticed in the mouth. The microscopical appearance of the erosion also differed with the temperature. If the boiling was at a lower temperature the erosion was smooth, but the higher the temperature the rougher the surface became, thus agreeing with the varying microscopic appearances noted in natural erosion. The dentine also became translucent, also agreeing with the natural appearance of many erosions, and the enamel became more brittle and its adhesion to the dentine became weaker. From these experiments Professor Znamensky infers that the tooth-cartilage which binds the calcareous particles together becomes removed by boiling and that the salts, becoming isolated, very easily fall away from each other, just as in a mixture of osteo and amalgam, as the cement becomes washed away the particles of amalgam become isolated and are easily broken. A boiled tooth when placed in an acid decalcifying solution is dissolved much more rapidly than one which has not undergone boiling, and the rapidity of decalcification varies with the temperature at which the tooth has been heated. Professor Znamensky also used dry heat by means of the blow-pipe, both directly on the tooth and also when the latter was protected by a thin layer of plaster of Paris. He found that at the heated part the dentine swelled and the enamel peeled off, leaving an appearance very similar to the so-called atrophy of the crown. As the result of these experiments the investigator draws the conclusions that the tooth cartilage is the cement which joins intimately the granules of lime salts, and that the loss of this cement from any cause induces

the mechanical falling off of the isolated granules, which would also be more easily attacked by any acid present. If this goes on slowly, a smooth, glossy surface is produced, but if quickly the surface is pitted, the pits corresponding to the bed of the individual granules. The sensitiveness of erosion cavities is explained by the theory that as the process of "dechondration" proceeds, the dental filaments with their tender protoplasm become exposed. This sensitiveness is greatest when the disease is in active progress, and passes away when the defect becomes stationary. Although the investigator thinks that the action of the tooth-brush, etc., does not cause the disease, yet he thinks the brushes, powders, and certain kinds of food modify the defects. He explains the fact that the teeth usually are affected on the labial surface by the theory that the internal alveolar plate is much thicker than the external, its nutrition therefore is better, and consequently nutrition of the internal portion of the teeth is also better. When the disease is slow, the pulp, being irritated by the exposed dental filaments, forms secondary dentine and recedes, when on the contrary the disease progresses very rapidly, the new dentine has no time to develop and the pulp becomes exposed. So far as we know, Professor Znamensky's experiments have not yet been or confirmed disputed by other investigators, but we have no doubt that before long we shall have on record the results of similar experiments. If erosion is due to loss of tooth-cartilage it yet remains to be discovered why the teeth of certain persons are apt to lose this substance, and why certain animals, for instance, many of the seal tribe, are effected by this disease. We shall await further contributions toward the elucidation of the subject with much interest.—*Dental Weekly*.

CEMENT FOR MENDING BROKEN PLASTER CASTS.

BY DR. J. G. HARPER.

THE Cement is made by dissolving celluloid in ether. He used the sheet celluloid, which can be secured from dealers in art supplies, for a cement. Add sufficient celluloid to make a very thick creamy paste. The broken surface is thickly coated and the parts held together for a few moments, and then allowed to harden for not less than three minutes before handling. He also stated that a thin mixture was fine for coating models used in rubber work to prevent

the plaster sticking to the rubber, and also to give the palatal surface of the plate a polish : claimed that it was superior to collodion. I would suggest using the coloured celluloid, or to colour the mass by the use of a little red anilin, first dissolving the anilin in a little alcohol. The advantage in the colour is that one can see just where the surface is varnished and no part is skipped.—*Dental Weekly*.

HOW TO REMOVE CROWNS SET WITH VARNISH OR GUTTAPERCHA.

By R. E. PAYNE.

TAKE a small medicine dropper, put a white cotton string or wick in it, cut it off even with the tapering glass end, then draw in a few drops of alcohol and light it. You have a miniature alcohol lamp, with a flame about the size of a pin's head. Heat the tip of the tooth and remove it.—*Items*.

MODELLING WAX.

BEST yellow wax, 50 parts ; Venice turpentine, 7 parts ; lard, $3\frac{1}{4}$ parts ; bole, elutriated, 36 parts ; mix and knead thoroughly.—*The American Dental Weekly*.

Review.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH, by G. V. BLACK, M.D., D.D.S., Sc.D. Philadelphia : S.S. White Dental Manufacturing Company, 1897. Fourth Edition.

THE author may be congratulated on a new edition being needed at so early a date. Lengthy comment is needless on so well-known and valuable a book, and, indeed, no alteration has been made in this edition except the inclusion of tables, suggested by William E. Harper, showing the angles of teeth and the angles of the surfaces of teeth. A new term, "embrasure," is introduced, which is applied to "an opening that widens outward or inward ; as an opening in a wall for cannon" "that portion of the inter-proximate space that widens towards the buccal or labial or towards the lingual surface."

THE DENTAL RECORD.

VOL. XVIII.

JUNE 1st, 1898.

No. 6.

Original Communications.

CATAPHORESIS.*

By A. B. WOLFENDEN, L.D.S.I.

MR. PRESIDENT AND GENTLEMEN,—Cataphoresis has almost unlimited possibilities, and the variety of cases where its aid can be brought into use are very great. For instance, in the preparation of cavities where the dentine is sensitive, where it is desired to make a good exposure to hasten the destruction of the pulp, the application of medicaments to putrescent pulp canals, and for the treatment of pyhorrea alveolaris. The current can also be used with advantage for immediate separation of teeth, the removal of fillings where acute periostitis is present and the bleaching of discoloured teeth.

In all cases, where possible, the rubber dam ought to be applied, although good results can be expected where the tooth can be kept dry with napkin and saliva ejector. The dam having been fixed, all finger rings should be removed from the hand of the patient which is to hold the cathode or negative pole. The apparatus being ready for use, a fresh solution of cocaine is made with warm water; a pellet of wool dipped in the cocaine solution is put into the cavity, the point of the electrode is placed upon it, and the indicator is very slowly turned to about five volts. Allow it to remain two or three minutes at this, then very slowly turn on more current till 10 or 15 volts are reached, and continue the application according to the work it is wishful to perform. For the preparation of cavities seven to 10 minutes is usually long enough; for the removal of pulps, continue 20 to 30 minutes. If the pellet of wool in the

* A Paper read before the Manchester Odontological Society.

cavity becomes dry, turn off the current, and either moisten again or put in another pellet. For the removal of pulps, I find it most certain to nearly expose after 15 minutes application, then give another 10 minutes, when the pulp can be removed painlessly. From experience, one finds that the softer the dentine the more rapid and certain is the action of the current ; hard dentine of healthy teeth, and dentine where arrested decay has taken place, and secondary dentine, take very much longer to penetrate.

The electrode points, as usually supplied, do not cover the surface of decay sufficiently, so that one occasionally gets sensitiveness in certain parts of the cavity. To obviate this, tin foil, platinum foil, or scraps of soft platinum can be readily cut to size of the cavity, and placed over the wool, so as to diffuse the current more thoroughly.

It was found necessary to remove several osteos, and replace them with gold fillings. In all the cavities very much longer time was required to deaden the sensibility of the dentine than in teeth where fillings had not been previously inserted.

The electrode should not be taken away or displaced from the cavity without turning off the current, otherwise the patient will receive an unpleasant shock. The point of the electrode should be kept away from all metal fillings ; suppose there are two cavities between two centrals, and one has been filled with gold, by varnishing the gold filling, and placing a small piece of rubber dam over, it becomes thoroughly insulated. By taking this precaution no shock will be caused.

With your kind indulgence, gentlemen, I should like to mention one or two cases where cataphoric treatment has been employed :—

1st. The patient, a lady of very nervous temperament, who usually is exceedingly difficult to work for, required a small bridge. The points for anchorage were the left canine root and the left upper first molar, which was very much elongated owing to the loss of the occluding teeth. The molar was alive, and it was necessary to shorten it considerably, as a lower case was to be made. With a fissure bur, the enamel was cut through to the dentine, when the patient showed signs of pain. Cocaine on wool was applied to the groove made by the fissure bur, and the platinum wire of the electrode pressed on the wool. This was kept on for 10 minutes, and the bur applied again. Four applications of the current of 10 minutes each

were given in 50 minutes; a good exposure was made practically without pain; a devitalizing fibre was put in, and sent patient away. She returned the day but one after; the pulp was dead, the remaining portion of crown was cut off, pulp removed, canals filled, tooth coned, and band fitted for gold crown.

Case 2. Gentleman with a left lateral root nearly broken to the level of the gum. It was so close that it was difficult to devitalize it in the ordinary way, but the root was just long enough to get on the rubber, and fasten with silk. This was the first pulp I had attempted to remove; the current was used as strong as could be comfortably borne; in 15 minutes the pulp was removed absolutely without pain, and at the same time a cap and pin were fitted for a Richmond crown.

Case 3. Patient, a gentleman, right lateral to prepare for a Richmond; found pulp alive; root so close to gum that it was impossible to apply dam; a rapkin was tucked under upper lip, and saliva ejector used. Cataphoresis applied, and in 15 minutes pulp removed successfully.

Case 4. Patient, a lady with a right lateral very badly discoloured, and containing a large amalgam filling. Owing to its unsightly appearance she wished to have it crowned. The filling was so large that it was expected the pulp would be dead; the crown was cut off with a fissure bur without pain, care being taken to leave a little of the crown to apply rubber if needful. When the drill was applied in the direction of the root canal, it was found there was still some live pulp remaining. Cataphoresis was used for 30 minutes, and the pulp was removed with considerable pain. This was due probably to the formation of secondary dentine, which had not been penetrated by the current.

Case 5. Patient, youth age 16. Acute periostitis of upper right first bicuspid, caused by death of pulp under large amalgam filling. Pad of paper fibre lint was moistened with strong solution of cocaine, and cup electrode applied for about 15 minutes. The filling was removed with very little pain.

It is very necessary that the current be controlled within the boundary of the pain limit, and important to avoid impulses of current by rapid advancement, or by movement of, or displacement of, the anode, and of attention to the maintenance of a moist state of the anodal and cathodal contacts

DISCUSSION.

Mr. SIMMS complimented Mr. Wolfenden on the success of his demonstration on cataphoresis at the previous meeting. It was a subject about which they wanted to know all they could, both for and against, and therefore they were exceedingly indebted to Mr. Wolfenden for bringing forward the cases he had enumerated that evening. His communication, however, did not record any failures, and those were what they wanted especially to hear about, in order that they might know how to proceed, and be able to understand the matter better. There was a great difference of opinion in regard to cataphoresis, as there was in regard to most things, and many who had used it had not been so successful as Mr. Wolfenden had. His own experience was that cataphoresis did not seem to do so well where it was needed most. Upon this point they wanted to accumulate a mass of evidence, the result of experience, before they could decide as to the full value of cataphoresis. He was quite certain it had a future before it, and perhaps an important one, but he was not so certain that it would be of universal application. None the less were they indebted to Mr. Wolfenden for his interesting demonstration. It was a subject in which they were all interested, and the case Mr. Wolfenden demonstrated was eminently successful. He believed cases would be found where cataphoresis had most decidedly a very important place, but he did not think the time had yet come to say what that place was.

A word of caution was perhaps necessary as to the use of cataphoresis. While the electric propulsion of cocaine through a tooth into the tissues would probably be harmless, that might not be so in regard to other substances. For instance, there might be the temptation to complete the destruction of a pulp by cataphoresis where arsenic had previously been used. Theoretically, at any rate, that would seem a dangerous practice, and he would like to utter a word of warning as to the use of cataphoresis. His own experience had been, on the whole, a favourable one, and he was glad to submit the following notes of cases :—

Case 1. Miss O. Upper central incisor very sensitive to excavation. Rubber dam applied. Cataphoresis used for 10 minutes, with cocaine solution in water. Voltage, 5. Tooth very sensitive to current, but sensitiveness of dentine so very greatly diminished as to enable thorough preparation of cavity with engine bur.

Case 2. Miss C. N. Patient suffering great pain for several days in right lower lateral canine. The decay was entirely superficial, and it was barely through the enamel. A lower denture had been worn with gold clasp encircling the tooth. The patient had been awake the whole night preceding her visit with acute pain, and was desirous of having tooth extracted. Cotton wool passed across surface of decay produced a paroxysm of pain. It was decided to cataphorize the tooth, and extirpate the pulp, so the rubber dam was applied, and a solution of cocaine in water used. In 15 minutes the sensitiveness of the surface of the decay was so much reduced as to enable one to bur a certain depth with the engine. A further 15 minutes' application was followed by another drilling, and then at the end of the third quarter of an hour the pulp was reached, and found sensitive. A further 15 minutes of the current thoroughly anæsthetised the pulp. The full strength of the battery—30 volts—could be borne without any pain or uneasiness, and current contact could be broken without the patient being conscious of it. The pulp was now painlessly extracted and the root and tooth filled at the same sitting. There has been no subsequent pain.

Case 3. H. M. This was a case selected because of its apparent suitability for the demonstration of the good effects of cataphoresis. The tooth was a second left lower bicuspid, with a large interstitial cavity, the pulp being fully exposed. There was no present pain, but from time to time there had been pain, and carbolic had been applied to stop it. The rubber dam was put over the two bicuspids. The tooth was acutely sensitive to the current, which could only be borne up to 5 or 7 volts with pain to the patient, the pain increasing very much when any attempt was made to increase the current. Although applied for an hour, there was no diminution of sensitiveness in the pulp, which subsequently had to be destroyed with arsenic.

Case 4. Miss A. Left upper canine, with approximal decay. No previous pain in the tooth, but on excavation the pulp was found exposed and sensitive. The tooth was isolated with rubber dam, and the current applied with a solution of cocaine in water for seven minutes. It was now possible to pass a probe to the end of the root, very slight pain being felt. Current applied for four minutes longer, and the pulp was then extracted without slightest sensation

to the patient. It was found possible to use full strength of battery—30 volts—within a few minutes after applying current.

Case 5. J. W. B. The patient presented himself on Monday, November 29th, having had the left central and lateral broken off in playing hockey the previous Saturday. The pulp of the lateral was exposed and inflamed. The central tooth was very painful, but the pulp was not quite exposed. After 25 minutes' application of cataphoresis, with a solution of cocaine in water, the pulp of the lateral was extracted with the very slightest sensation—voltage 30. The central was subsequently treated in the same manner, the pulp being anæsthetised in 17 minutes, and then extracted with the slightest sensation to the patient.

Case 6. J. S. Left lower second molar ; pulp exposed. This tooth was exceedingly sensitive to the electric current, which was carefully and patiently applied for an hour, with solution of cocaine, with no diminution of sensitiveness. The pulp was subsequently destroyed with arsenic.

Case 7. Miss X. This patient had two large interstitial fillings, and a labial inlay filling in the upper right central incisor. The tooth was discoloured and unsatisfactory, as compared with adjoining teeth, so that it was decided to crown the tooth. The inlay was taken out, and the pulp exposed by an engine drill. The pulp was found alive and sensitive. The current was now applied for ten minutes, the full strength of the battery being reached in the first five minutes, without discomfort to the patient. The pulp was now extracted without slightest sensation to the patient.

Case 8. J. B. In preparing the right second lower molar for filling the pulp was found to be exposed and very sensitive. As the patient was returning to Cambridge the next day, it was decided to try cataphoresis. The rubber dam was applied ; the steel clamp it was found necessary to use to keep on the rubber, being insulated with gutta percha. The tooth was found very sensitive to the current, which was applied for 30 minutes, with solution of cocaine in water, with one drop of guiacol, the voltage being 15. It was now possible to thoroughly expose the pulp with an engine drill. The current was then applied for 20 more minutes at the same voltage, and on examination with a probe the two nerves appeared anæsthetised one-third inch down. The current was again applied for a further period of 30 minutes, the tooth becoming less and less

sensitive, until 30 volts were reached, and no sensation was experienced by the patient in disconnecting the pole. The nerves were now extracted, the anterior one absolutely without pain, and the posterior one with a slight sensation of pain.

Case 9. Miss S. First lower left bicuspid. Pulp found exposed on excavation; no previous pain in the tooth. The current was used after applying rubber dam. Full strength reached—30 volts—in seven minutes. At the end of 15 minutes pulp extracted with absolute immunity from pain.

SOME NOTES ON ODONTOBLASTS.*

By A. LANDON WHITEHOUSE.

MR. PRESIDENT AND GENTLEMEN,—It is my purpose in this short paper to try and set before you some of the peculiarities of this dental tissue, the functions of which are still obscure and unproven, and an ensuing discussion by the learned gentlemen present will probably help to elucidate them.

The membrana eboris forms a fringe to the pulp, each odontoblast cell being roughly on an average .02 mil. long and .004 broad. The cell varies in size and condition; in early life it is oval, later it becomes columnar elliptical in shape, and later oval again with blunted ends. It has for an animal cell a large distinct nucleus, situated at the end of the cell nearer the pulp.

The odontoblasts have the following functions:—Formation of dentine; nourishing, nervous and phagocytic functions. There are three theories of the formation of dentine, the one generally accepted is that the cells form the dental fibrils; the homogenous substance in which the cells are embedded (thought to be secreted by the cells—Klein) is the seat of calcification, which starts from the surface, driving before it all the pulp tissue, leaving, as a prolongation of the odontoblast cells, the dentinal fibrils.

In the formation of secondary dentine—I take as my authority Mr. Hopewell Smith—there is no proof that the odontoblasts take part. When it is about to be formed the odontoblasts greatly increase in numbers and layers, and interposed between them are small, round structureless bodies like calcospherites.

* A Paper read before the Students' Society of the Dental Hospital of London.

It has been suggested that this thickening is an attempt on the part of the pulp to shield itself from external influences and no part in the process of the formation of dentine. Dr. Léon Williams surmises that in the formation of secondary dentine, caused through caries, the first change in the affected pulp tissue is its reduction to an embryonal or protoplasmic state. The protoplasm, before transformation into basis substance, reappears, and may break up into odontoblasts or osteoblasts ; in the former case the result of irritation of the pulp is dentine, in the latter bone. This statement has not found favour with English authorities. That these cells have a nourishing function is pointed to by the fact that in the *Lotello*, according to Mr. Tomes, the teeth have neither vascular canals nor dental fibrils. In the *glander* there are fibrils and vascular canals, in the *Hake*, vascular canals and no fibrils ; and in the teeth of man there are fibrils only, showing that, perhaps, as a result of evolution and the absence of vascular supply the odontoblast has developed a nourishing function.

In regard to the nervous function of the odontoblasts, although *Morgenstern* has traced filaments of the nerves crossing through the dentine and ending in the enamel, it is generally accepted that the odontoblast cells are definitely the sensory organs of the pulp, and that the terminations of the odontoblasts are nerve endings, although not of a structure usually found in other parts of the body. The odontoblasts convey sensation to one another by their lateral extensions, and are connected below with the plexus of *Ratchlow*. In good sections the nerves can be seen crossing between the odontoblasts, but appear to stop at the dentine. The effect of caries on this tissue is to cause the cells to shrink and be pressed inwards towards the pulp. When the stage of caries has reacted to the expansion of the tubules, the odontoblasts become a homogenous mass of cells with scattered nuclei. In idiopathic exposure of the pulp the odontoblasts appear as oval opaque cells, having undergone fatty or mucoid degeneration.

Arköviy has described as *pulpitis acuta septica*, a condition of inflammation of the pulp caused by organisms before caries have reached it, and having a thickness of dentine between the carious portion and the pulp ; organisms come down the dentinal tubes, develop in the pulp, and hang round the odontoblast cells in chains or zooglea. The odontoblasts incorporate these organisms to such

an extent as to obscure their nuclei. It appears that these cells have a phagocytic action on these bacilli, or, as it has been described, "a phagocytic reaction against organisms."

The action of drugs used in dentistry on the pulp and these cells is too well known to need repetition, but it does not appear quite clear how the use of strong escharotics can stimulate the formation of secondary dentine in treating cavities where there is only a thin layer of dentine over the pulp previous to permanent filling.

In conclusion of this paper, I would thank you for the patient hearing and claim indulgence as a first year's man.

THE "DUMMY PATIENT," OR STUDENT'S PRACTISING GROUND.

By GEO. CUNNINGHAM, M.A., L.D.S., D.M.D. Harvard.

THE desirability of having some good working model capable of carrying a full set of natural teeth, and representing as far as possible all the positions and the attendant difficulties experienced by the dental student in working on the mouth at the chair, must have occurred to every teacher desirous of grounding his pupils thoroughly in the various dental operations before applying them to the human subject. Various devices towards this end have been adopted, varying from the simple row of teeth mounted in a block, to the more recent so called rubber tooth forms suggested by Dr. Weeks in his excellent work on Operative Dental Technics. Apart from these simpler forms, the skull or parts of the skull have been adapted to a special head rest to be attached to the chair. No matter how efficient the mechanism of the attachment of the skull model either to the chair or the table, it was foredoomed to a very limited field of use, simply from the fact of expense, and that there was no opportunity of adequately refurnishing the skull with teeth from the breaking down of the sockets; indeed, any such arrangement always seemed to me a waste of good material. The wig maker's block has been introduced as a substitute for the actual skull. It furnishes a good practical as well as a serviceable dummy patient, but all the arrangements for the adaptation of the teeth which I have seen seem to me somewhat clumsy, and though it may serve its purpose for the practice of filling, the time and labour involved is too much for such frequent renewal as would be requisite for

exercises in extractions. After working with the Fergus Phantom, more especially with a view to exercises in crowning, I discarded it, mainly because of the weight of the armatures. I have recently had the opportunity of experimenting with the improved Phantom devised by Mr. Julius Weiss, of Vienna, who many years ago introduced the skull variety of Phantom known as the "Wiener Instituts Modell," and it seems to me a very valuable adjunct to our school equipment. A general notion of the apparatus can be readily gathered from the accompanying illustrations.

In Fig. 2 the apparatus is shown as adapted for fixing at a table or bench. When it is desired to exercise the student at the chair it is a simple matter to remove the sliding bar from its socket and substitute it for the usual head rest on the chair. The two armatures, which represent the jaws "E.E." Figs. 1 and 2 consist of a metal frame work into which the natural teeth are placed. The mode of fixing the teeth in these armatures is both ingenious and effective. The armature is detached from the socket, and the upper and narrower half is filled with putty to the height of the pins, which permits of the proper and rapid adjustment of the teeth into something like their natural positions. When the teeth have been thus set up to the satisfaction of the teacher, then plaster of Paris is allowed to flow round them so as to fill up the remaining part of the metal frame representing the jaw. When the plaster is sufficiently set so as to retain the teeth in position, the putty is removed and the remainder of the ring is filled up with plaster of Paris from the back. If it is desired that a single root tooth should be more firmly retained in the plaster socket it is well to notch it so as to give it a firmer hold. By means of the set screws "D" and "C" the armatures may be fixed in any position relative to one another, and so securely as to resist the strongest pressure which may be brought to bear upon them in condensing gold or in any other dental operation requiring considerable force. The pins "H.H." hold the plaster firm, and the heads of these pins "G.G." serve as points of attachment to which pieces of rubber-dam may be attached in order to simulate the cheeks of the patient (see F. Fig. 2). For ordinary filling operations and crown work, the trouble involved in setting up the teeth is not too great.

One word, *re* the term "phantom." I don't like it, it sounds unenglish. I know that it has been used to mean a model, manikin,

or effigy upon or by which to illustrate bandaging, surgical, obstetric, and other operations This is so far from the original meaning of

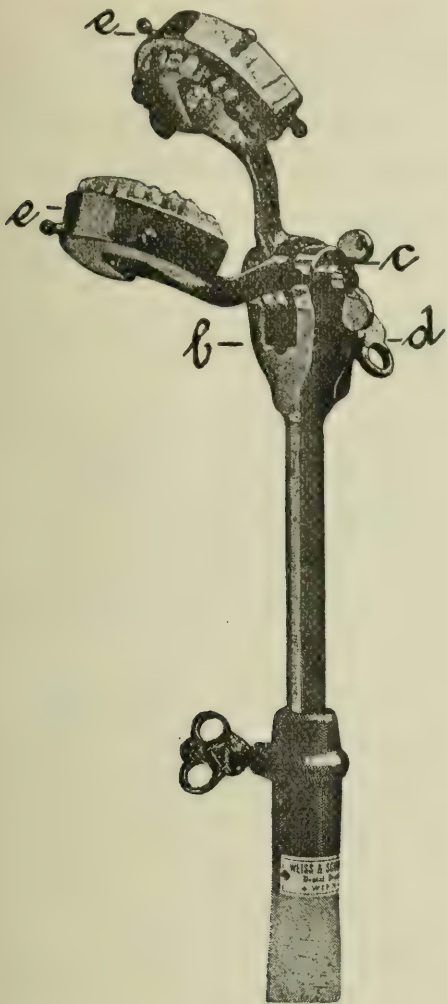


Fig. 1.

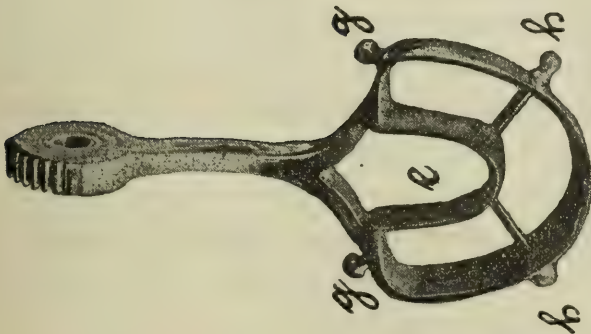


Fig. 3.

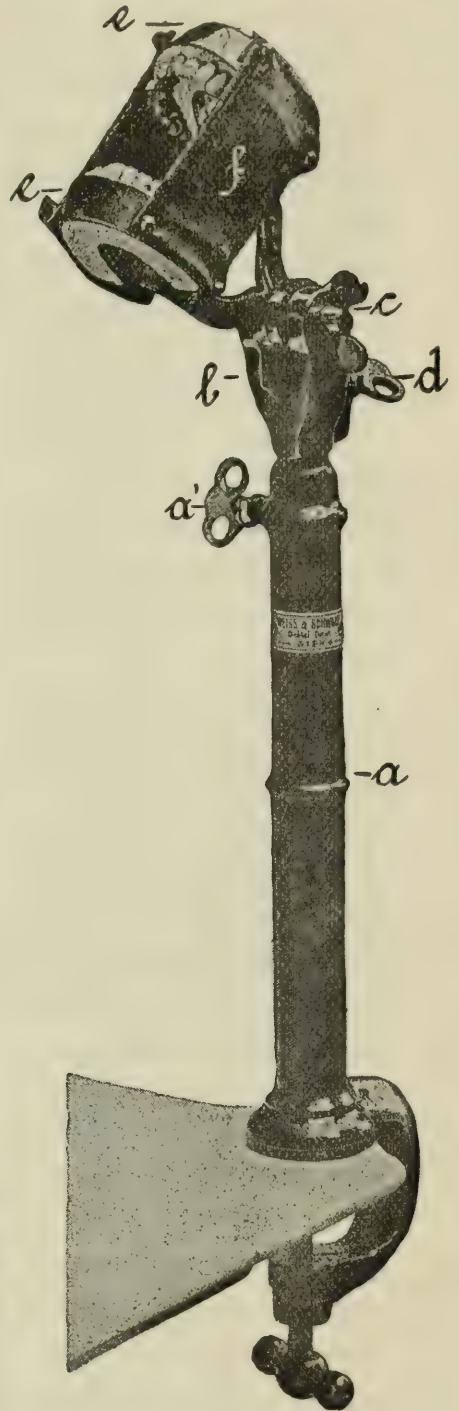


Fig. 2.

the word, which is defined as "an illusive perception of an object that does not exist," that it is not surprising that it has never got into common use.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly Meeting of the above Society was held on the 2nd ultimo, the PRESIDENT (Mr. W. E. Harding), in the chair.

Mr. F. H. M. VAN DER PANT, L.D.S. Eng., was ballotted for and elected as a resident member.

Mr. W. B. Woodhouse signed the Obligation Book and was duly admitted a member of the society.

The LIBRARIAN (Mr. W. A. Maggs) stated that Tomes's "Dental Surgery," Fifth Edition, had been added to the library, and he had received a paper read before the Royal Philosophical Society by Mr. C. S. Tomes on "The Development of Marsupial and Other Tubular Enamels with Notes Upon the Development of Enamel in General."

The CURATOR (Mr. Storer Bennett), in making his usual report, said he had been asked to show, but not to announce as a contribution to the museum, two lower jaws that had been dug up at Highcliffe, about four miles from Worthing. There was nothing very remarkable about them except that they were said to be Anglo-Saxon jaws, and to date from about the year 600. He also exhibited a small supernumerary wisdom tooth, extracted by Mr. Watford, of Eastbourne, from between the second upper molars and the wisdom tooth itself. It was a curiously flattened tooth, very small, but with exceedingly well marked cusps, and very much the shape of a seal's tooth. Mr. Watford had also sent two models from a young lady, aged 17, showing an entire absence of bicuspids. Mr. Morton Smale, to whom the society was so deeply indebted for many pathological specimens of comparative dental pathology, had sent a most interesting skull of a young adult lion not quite fully grown. That it was adult would be seen from the fact that the canines were fully erupted in the lower jaw. In the upper jaw on the left side the canine was missing, though it was clear from the socket that the tooth was fully developed and erupted to its ordinary extent. He also exhibited two other specimens, taken from monkeys, illustrating a similar condition.

Mr. W. R. ACKLAND (Clifton) read some notes on "Catarrh of the Antrum." He had frequently met with patients suffering from neuralgia in and round the malar prominences during nasal catarrh, the pain being of a dull character, but became acute for a second or two on blowing the nose. There were often flickering pains in the temporal region or the whole teeth on that side of the jaw might ache. He attributed these pains to the catarrhal state of the antral mucous membrane spreading from that of the nose. He found the use of a cocaine and menthol spray, using the five per cent. solution of cocaine, give very beneficial results in treatment.

Mr. G. THOMSON exhibited several teeth which had been stopped, and which he kept in his possession as being useful in explaining to his patients certain details of operating. The importance of correct contours, and of a smooth polished condition of the proximal surface did not seem to have struck some operators, and he thought it would be useful to look at the normal condition met with in the mouth of flesh-eating animals, carnivora and omnivora. He exhibited some skulls which were in the museum, and pointed out that the neighbouring teeth in the molar regions were not only touching but were in contact, and polished each other's surfaces. The skull of a seal showed quite a different condition. The food of that animal was entirely different, and the teeth were widely apart. In the skull of a gorilla the teeth were not only touching each other, but were in very hard contact, so hard that the surfaces became polished. He noticed in the skull of the lion which had been exhibited that there was not that somewhat flattened surface at the the top on the grinding surface, yet there was a distinct point of hard contact. He had also noticed some time ago the skull of an Asiatic chief in which the teeth had decidedly sharpened points both in the molars and bicuspid, very much resembling that of carnivora. Proximal cavities unless contoured so as to restore the natural condition would not be permanent or satisfactory. He only knew of one permanent way to contour a molar and bicuspid, and that was with a, so to speak, "greasy" gold filling.

Mr. H. LLOYD WILLIAMS, referring to Mr. Ackland's communication, said as a general rule dentists looked upon the spread of inflammation from the nasal mucous membrane to the antrum as a very rare thing. In the cases dentists were called upon to treat it was often difficult to trace the origin. The only case of acute

inflammation of the lining membrane of the antrum that he had treated was so serious that he doubted very much whether there was not some new growth somewhere. It was in a man, aged 45, and he wasted rapidly. Examination discovered no evidence of any growth, and after a short treatment he was sent to the seaside, where he quickly recovered.

Mr. ROUGHTON said rhinologists very often saw cases in which inflammation extended from the lining membrane of the nose to the interior of the antrum. He thought a good many members of the dental profession considered that the antrum belonged to the teeth, but of course physiologically it was one of the sinuses of the nose, and mucous membrane that lined it was in direct communication with the mucous membrane lining of the nose. It would therefore be a matter of surprise if inflammation starting in the nose did not sometimes spread by direct continuity into the antrum.

Mr. ACKLAND, in reply, said all his cases were acute, because his patients came for the relief of pain, and in chronic catarrh pain was very rarely present.

Mr. STORER BENNETT, alluding to Mr. Thomson's communication, pointed out that although in frugivorous skulls the pre-molars were certainly in close contact, still there was no justification in saying that in true carnivora such a condition was common. Anyone looking at the lion's skull would see there was nothing like the hard contact between the teeth that there was in the frugivorous animals. It was of no great importance, but if deductions from the jaws of animals were to be drawn, at least it was necessary to be accurate in the anatomy before making inferences.

Mr. W. A. MAGGS, supplementing Mr. Bennett's remarks, observed that in animals with no diastema the teeth would be naturally in closer contact than in other animals. Then the nearer they approached to a form like that in seals the less need was there for mastication, and a greater need for sharp pointed teeth with which to seize the slippery prey.

A Paper, by Mr. Alfred Coleman, on "A Method of Prolonging Anæsthesia in Operations on the Mouth" was read in his absence by the Secretary. The administration of anæsthetics through the nose was no novelty. He believed the first to employ the method was the late Sir B. W. Richardson, who attached a small tube to a chloroform inhaler, and inserted one end of it into the patient's

nostril. Mr. Coleman soon adopted the idea, but it was not until recently that he had met with a success with nitrous oxide which warranted him in bringing his method before the notice of the profession. His appliance consisted of a nose-piece adapted to fit accurately over the base of that organ, and connected with a very flattened tube made to rest evenly upon the forehead. To this tube was connected a rubber one of good dimensions passing over the patient's head, and attached to a very oval shaped gas bag (a lightly constructed two-way stop-cock, and an outlet valve intervening). The gas bag was connected with the gas bottles in the ordinary manner. The base of the nose-piece should be provided with a rubber air-pad like the ordinary face-piece, but of a much reduced size. In applying the instrument, the nose-piece having been placed *in situ*, an air-padded face-piece large enough to completely cover both nose-piece and mouth, and having only an outlet valve, was placed upon the face, and gas from the bag turned on, the patient in the interim having breathed air through the nose from the opening of the two-way stop-cock. When anæsthesia was fully established, the face-piece was removed and the operation proceeded with, whilst by slightly distending the bag beyond its ordinary capacity, the patient could not avoid continuing the inhalation of nitrous oxide. Through the kindness of Drs. Buxton and Hewitt and Mr. Paterson, a number of experiments had been carried out, and the latter gentleman had tabulated the result of 15 administrations, which gave the minimum time of anæsthesia as 50 seconds, and the maximum 5 minutes. In administering gas and ether and air through the same nose-piece, Mr. Coleman used much the same ether apparatus as that employed by him for many years at the Dental Hospital for giving gas and ether only, but now in addition to the gas bottle he had connected with it a Fletcher's foot blower. He first gives the patient nitrous oxide, and, when rendered partially unconscious, diverts the flow of gas from the ether, and when narcosis is fully established and the operation about to be commenced turns off the gas and pumps air from the foot bellows through the ether, by this means continuing the anæsthesia by air and ether alone, and effecting of course a very large saving of gas. During his experiments with the ether arrangement he was led to try, with a modification of that instrument, a plan for administering chloroform in absolutely definite percentages of admixture with air.

He saw no insuperable difficulty in doing this ; but some time and labour would be involved before such an arrangement could be rendered perfectly reliable.

Dr. HEWITT thought that Mr. Coleman's energies had been very well directed in endeavouring to prolong the anæsthesia of nitrous oxide, but it seemed to him, if he might say so, that the chief objection to the system was that in a definite percentage of patients there was nasal obstruction. If it was certain that a patient had no nasal obstruction, or if the nasal obstruction was such that nasal respiration would continue, then it appeared to him that Mr. Coleman's plan had everything to recommend it. Mr. Paterson's figures were exceedingly interesting. To obtain an anæsthesia of five minutes' duration by the method spoke exceedingly well for it. One would rather have liked to know what kind of anæsthesia was produced, whether the patient was perfectly quiet during the time or whether there was some movement in the chair. It must be borne in mind that during the last 10 or 20 years the ideas of what anæsthesia should be had been somewhat modified. Operators nowadays expected their patients to be absolutely immobile, and very properly so. He did not see that that condition could always be brought about, but at the same time, if the method of Mr. Coleman could not provide that comparatively perfect immobility on the part of the patient, that was another thing that should be laid before the meeting. It was well-known that nitrous oxide was exceedingly safe, and if the method could be so improved that it could be depended upon, a considerable step would have been gained. It seemed to him in using a nose-piece one ought to be exceedingly careful to have it properly washed between each administration. In the case of a face-piece that was not so necessary, because the pad of the face-piece went over the cheeks, and was a considerable distance away from the mouth and nasal orifices. But in the case of a little pad such as had been mentioned, which must come very near the nostril indeed, it was exceedingly important that that contingency should be provided for. If those words were borne in mind and patients could be obtained whose nasal passages were free, there was a distinct future for the method. Considering that nasal catarrhs had been exceedingly prevalent of late, he should prophesy a much greater range of success for the method in summer than in winter.

Dr. SILK said the proposal of Mr. Coleman seemed to involve two principles, in the first place the possibility of prolonging the anæsthesia by means of nitrous oxide, and in the second place the introduction of the gas through the nasal passages. With regard to prolonging nitrous oxide anæsthesia, that had been more or less the aim of all anæsthetists. Dr. Hewitt, with his usual modesty, had not put forward his own claim to such a marked success in that direction when he introduced the admixture of oxygen and nitrous oxide. With regard to Mr. Coleman's apparatus, in the first place there was the difficulty with regard to the nose-piece, the frequency with which nose-breathing was absent in patients. Then, again, from a dental point of view, the arrangement of the apparatus as depicted on the figure was a little awkward in connection with the dental chair, but that of course was a minor point. Other propositions had been made to prolong anæsthesia, one being to put a nasal tube down the nose and convey the nitrous oxide to the back of the throat—but to put a tube of any size through the nose frequently gave rise to bleeding. Another proposition was to put a tube at the back of the tongue towards the epiglottis, or over the epiglottis, and let the nitrous oxide pass through it, but in all these proposals there was one difficulty which seemed a very great one, namely, that of giving a sufficient percentage of nitrous oxide. Another difficulty which struck him was that nitrous oxide from a bottle of condensed gas was intensely cold, and he would be a bold man who would pour a continuous stream of intensely cold nitrous oxide direct on to the glottis and the surrounding structures for any length of time. It was therefore necessary that there should be some apparatus for warming the nitrous oxide. As to the principle itself, he thought there could be no doubt it was a good one.

Mr. RUSSELL BARRETT said he was present at the experiments made by Dr. Buxton, and they were extremely successful. Very long anæsthesia was obtained, but the patients were rather troublesome towards the end. If he recollected rightly, Dr. Buxton did not do exactly as Mr. Coleman suggested, namely, give anæsthesia entirely through the nose, but anæsthetised the patient with nitrous oxide in the ordinary way by the ordinary face-piece, and immediately held the nose-piece over and kept up the anæsthesia with much greater pressure in the bag which he controlled with his hand.

Mr. PATERSON said he was the operator in the 15 cases quoted at St. Bartholomew's Hospital by his namesake. There was no doubt in his mind, having used the apparatus, that it had very great advantages, and that anæsthetists would in the future be compelled to adopt some such system in prolonging anæsthesia for dental cases. In the list quoted the times were those roughly occupied for the particular operation engaged. The longest one of five minutes was a case in which there were several teeth taken out—13 being taken out—and it was also a difficult case, inasmuch as he had to split an upper molar and take it out piecemeal. Also some sponging had to be used, and a greater time was occupied in that way. The first case at St. Bartholomew's was a case very similar to what Mr. Barrett described, that was to say, the ordinary face-piece was first put on and gas was administered, and then it was taken off and the nose-piece was put on. That case was an utter failure. The second case was tried with a nose-piece alone, and the ordinary block face-piece covering it. That was, comparatively speaking, a failure also. Then it was discovered that they were trying to anæsthetise people who could not breath properly through their noses. The next case was a woman who was a splendid nose-breather, and the rapid way she went off and the way she lasted for a simple tooth extraction was remarkable. From that time he began to believe in the apparatus. Then the cases were chosen, that was to say, they observed the manner in which people breathed before they proceeded to settle whether the apparatus should be used or the old mouth apparatus. Therefore all the successful cases of Mr. Paterson's list were selected cases. The other cases, he was afraid, had been left out of account—the non-successful ones. There was no doubt in his mind, and he thought there would be no doubt in the mind of anybody who tried the method, of the great value of prolonging the anæsthesia. With regard to the apparatus itself, it was cumbersome, and rolled off the head. At St. Bartholomew's they rigged up the hand-rest of the chair in an upright position, twisted a piece of copper wire round it, and held the tube in the fork. The apparatus was also heavy, which was another drawback. Otherwise, as far as the principle of the thing went, and as far as the efficacy and the length of the anæsthesia went, there was no doubt in his mind that it was a valuable thing, and had come to stay.

Mr. BADCOCK asked if any after effects followed the prolonged application of anæsthesia.

Mr. PATERSON said he had seen none, but it must be recollected they were dealing with hospital patients, who were quite unused to anæsthetics, and were not so particular as private patients.

The usual votes of thanks having been passed the meeting was adjourned to June 6th, which is to be the Annual Meeting.

News and Notes.

THE following candidates, having passed the necessary examination, have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons in Ireland:—J. J. Hayden, F. H. G. Pakenham, T. J. Rea and A. G. Taylor. Miss A. A. Hall and J. I. Potter have passed the primary part of the examination.

DURING the April Examinations of the Royal College of Surgeons, Edinburgh, the following candidates passed the first examination for the License in Dental Surgery:—Francis Joseph Rhodes, Derbyshire; David Pollock, Bedford; Harry Ramage, Edinburgh; William Cecil Harrison, Lewes; William Joseph Ferguson MacKeown, Belfast; Henry William John Hawthorn, Wellington, Salop; Henry Cooke Watson, county Westmeath; Percy Lambert Smith, Worksop; William Alexander Findlay, Dumfriesshire; Alexander Luke Melrose, Edinburgh; Walter Campbell Shearer, Liverpool and Arthur Mitford Brown, Gateshead; and the following gentlemen passed the final examination and were admitted L.D.S. Edinburgh:—William James Newman Wood, Dumfries (with honours); George Brewis, Gateshead (with honours); Joseph Kennerley Pedley, London; John Park Inglis, Edinburgh; James Watt Somerville, Balloch; John Alexander Cairncross, Edinburgh; James Macleod, Sutherland; Francis Radley King, Newcastle; William Mill Irving, Langholm; John Herbert Gibbs, London (with honours); Alfred Branson, Rotherham, Yorks; Robert Charles Hillman, Ilkley, Yorks; Herbert William Kaiser, Birkenhead, and Harry Eugene Field, Birkenhead.

Mr. FREDERIC H. BALFOUR writes to the *Times* from the Villa Belvedere, Viâ Dante da Castiglione, Florence, under date April 19: "It is well known that the Italian Government has for some time past contemplated the disqualification as practitioners in Italy of all foreign medical men who have not taken an Italian degree. This unwise policy, however, seems hanging in abeyance, the authorities being apparently reluctant to put it in force in view of the great pecuniary benefits resulting from the presence of English and American visitors and residents, many of whom would be deterred from coming to Italy at all if they were unable to command the services of doctors of their own nationality. But with regard to dentists the Government is credited with different views, and it is said that prohibitive enactments are very shortly to be adopted in their case. This would surely be a very shortsighted and unjust step. Italian doctors stand at the head of their profession in Europe; but Italian dentists are greatly inferior, and in many ways far behind the times. The reason probably is that doctors are supposed to be more important to foreign residents than dentists; but surely there are many English people and Americans who are greatly dependant upon dental surgery, and would feel serious misgivings at the idea of living in a country where in case of urgent necessity and suffering they would only have an ignorant and unskilful operator to resort to."

THE *Vierteljahrsschrift* states that the addition of quite a little finely powdered borax to the powder will change a rapidly setting cement into a slow setting one. And, per contra, a drop of hydrochloric acid will make the cement set rapidly.

DR. VAJNA, of Budapest, suggests using a spray of ethyl-chloride to rapidly cool impresson composition.

ELOF FÖRBERG, of Stockholm, advocates the use of carbonized cotton as a permanent filling of root canals. It can be sterilized by bringing to a red heat before use, and is an absorbent of gases. For enlarging small canals he uses sulphuric ether as prepared by Herbst. A few drops of concentrated sulphuric ether are placed in a clean bottle and ether is added to saturation, the mixture is well stirred with a glass rod and the surplus allowed to volatilize.

THE DENTAL RECORD LONDON: JUNE 1, 1898.

A DENTIST ON THE MEDICAL COUNCIL.

THE appointment of a dentist to a seat on the General Medical Council is a matter for sincere congratulation. The appointment, being by the Crown, is tenable for five years, but these appointments have hitherto been usually renewed, and we may, therefore, possibly look forward to being represented for many years to come. In a measure, it postpones the question of our right to elect a representative to that body; for though theoretically we may urge that dentists should be entitled to choose one from their midst to represent them, yet it must be confessed that the matter is surrounded by many difficulties. Among the chief of these is the question as to who should form the electorate. Shall only those holding a medical as well as a dental diploma; or, shall a diploma at all be needed, seeing that in the eyes of the law those are equally dentists who are on the dental register and that a large majority of these hold no diploma of any kind whatever? We incline to the view that dental registration must be held the sole claim to a vote when such a vote is granted. But though many men, who practise in virtue of being in practice before 1878, are capable dentists and cultivated men, many others are certainly not. Indeed, the action of the Medical Council in admitting these to the Register has been the subject of some complaint. Under these circumstances it seems well that the consideration of this subject should be postponed. Year by year the proportion of men on the Register holding a diploma to those who do not increases, and as it increases so does our claim to direct representation increase. It is therefore obvious that we shall have a far stronger claim when, in the usual course of events, we may again find ourselves without a representative on the Council.

A recent speaker has said that a dental representative would not find his seat "a bed of roses," not because he would not receive absolutely courteous hearing at the hands of his colleagues, but because it will be necessary for him to go to the meetings prepared to cope with questions arising almost unexpectedly. We are fortunate in having as a representative one who from previous training as a teacher, an examiner and a working member of the British Dental Association, is familiar with those matters which affect our political and educational affairs. But in many senses, ideal as he is as a representative, it would be folly to expect that a millenium is immediately to follow in the guidance of dental questions. He will be but one among many, and though his voice may be potent, immediate changes cannot be expected. We mention this because it is possible, and, indeed, probable, that some will be found grumbling that more is not done than will be done. We feel confident that by persistently urging what he holds to be right our representative will ultimately obtain what he asks; but this will come slowly and not at once. But the appointment of Mr. Charles S. Tomes to the Medical Council is a distinct gain to the dental profession, and it is distinctly grateful for the appointment and to those who by their representations have aided to obtain it.

DENTAL BUSINESS AT THE GENERAL MEDICAL COUNCIL.

Friday, May 27th.

THE CURRICULUM FOR DENTISTS.

WHEN the General Medical Council met on this occasion it devoted a large part of its time to the consideration of the Final Report by the Dental Education and Examination Committee.

Members.—Mr. Bryant, Chairman; Mr. Carter, Dr. Cameron, Sir Philip C. Smyly and Dr. Reid.

The Report as presented by the committee was in the following terms, viz. :—

In November last, when the third Report of the committee "was brought before the Council, it was remitted to the committee to

draw up their recommendations in the form of a series of propositions, each dealing with a single subject, in order that the Council might be enabled in May to come to a definite decision on the questions before them."

This has consequently now been done, and it is to be hoped that this Report in its present shape will be found to be both intelligible and satisfactory to this Council.

The committee have also to report that the dental curriculum, as now brought before you, has received the support of all the dental schools (except Manchester and Dublin, which have not yet spoken), as witnessed by the petitions which are appended to this Report, and in which the petitioners express an opinion that it is undesirable to reduce the present scope of the curriculum and examination in general subjects, which they regard as a minimum necessary for the satisfactory qualification of a dental surgeon.

RECOMMENDATIONS OF THE DENTAL EDUCATION AND EXAMINATION COMMITTEE.

The Dental Education and Examination Committee, in accordance with the Council's resolution of November 30, 1897, beg leave to present their recommendations to the Council in the following revised form. If these are adopted by the Council they may be at once issued for the guidance of the licensing bodies and of candidates for licences in dentistry or dental surgery.

RECOMMENDATIONS AS TO THE COURSE OF STUDY AND EXAMINATIONS TO BE REQUIRED OF CANDIDATES FOR LICENCES IN DENTISTRY OR DENTAL SURGERY.

A. Preliminary Examination and Registration.

1. That every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students.

2. That no person shall be registered as a dental student who has not previously passed one of the preliminary examinations in general education recognised by the Council, unless, before July 22, 1878, he commenced professional study by apprenticeship to a dentist entitled to be registered, or by attendance on professional lectures.

B. Professional Study.

3. That every candidate for a licence in dentistry or dental surgery shall be required to produce certificates showing—

(i.) That he is at least 21 years of age ;

(ii.) That he has been registered as a dental student ;

(iii.) That he has subsequently to the date of registration been engaged in professional study for at least four years. [Not more than one year of *bonâ fide* apprenticeship to a registered dentist, if served subsequently to the date of registration, may be reckoned as a portion of the four years of professional study required.]

(iv.) That he has attended courses of instruction in the following general subjects, at a recognised medical school :—(a) Chemistry and physics (with practical laboratory work) for six months. [This instruction may be obtained at a science school recognised by the licensing body] ; (b) Human anatomy for six months ; (c) Dissections (with demonstrations) for 12 months ; (d) Physiology for six months (with practical laboratory work or a separate course of practical physiology) ; (e) Principles of surgery (including the elements of surgical pathology) for six months ; (f) Principles of medicine (including the elements of general pathology) for six months ; (g) Clinical surgery and clinical medicine (at a recognised general hospital) for 12 months.

(v.) That he has attended courses of instruction in the following special subjects at a recognised dental school :—(a) Dental anatomy and physiology, human and comparative (with practical work and demonstrations in dental histology), for [three] months ; (b) Dental surgery and pathology for [three] months, including *materia medica* and therapeutics applicable to dental surgery ; (c) Dental metallurgy (with practical work and demonstrations) for [three] months ; (d) Dental mechanics (with practical work and demonstrations for [three] months.

(vi.) That he has for two years attended the practice of a recognised dental hospital, or of the recognised dental department of a general hospital.

(vii.) That he has, before or after registration as a dental student, received for three years practical instruction in mechanical dentistry from a registered dentist, or in the mechanical department of a recognised dental school and hospital. [No portion of this instruction which is anterior to the date of registration shall be reckoned as a portion of the four years of professional study required.]

C. Professional Examinations.

4. That the examinations for a licence in dentistry or dental surgery shall be partly written, partly oral, and partly practical, and shall include the following subjects:—(a) Chemistry and physics; (b) Practical examination in dental mechanics and metallurgy; (c) Dental surgery, pathology and therapeutics; (d) Practical examination in dental surgery; (e) General anatomy and physiology; (f) General surgery. Referring to the two last mentioned subjects—[It is recommended that a synopsis of the scope of the examination in these subjects be issued by the licensing bodies.]

5. That the prescribed subjects of examination may be combined or distributed at the discretion of the licensing bodies, and may be taken at two or more successive examinations during the course of professional study; provided that no candidate shall be admitted to any final examination in dental surgery and mechanical dentistry until he shall have completed the required four years' course.

COMMUNICATIONS FROM DENTAL SCHOOLS AS TO THE EXTENT OF
THE CURRICULUM.

22A, Cavendish Square, W.,

February 1, 1898.

DEAR MR. ALLEN,—I have the pleasure to send with this note petitions upon the subject of the "general side" of the dental curriculum from a very large number of the dental hospitals (with schools) in Great Britain.

I hope that such an expression of opinion may help both the Dental Education and Examination Committee and also the General Medical Council in arriving at a conclusion upon the subject of dental education.

The Victoria Dental Hospital of Manchester will send their petition direct to you.

I also send with this a letter from the Dean of the Newcastle school, saying that the staff of that hospital prefer not to sign such a petition.

It is only fair that the Council should know that the Newcastle dental school have been in existence as a recognised dental school for a short period of time only.

When Manchester has returned its petition, all the English schools will have expressed their opinion. Edinburgh and Dublin have not yet answered my letter sending them the petition to sign ; if they are sent to me, I will forward them to you at once.

Yours truly,
MORTON SMALE.

(1) From the Dental Hospital of London.

TO THE GENERAL MEDICAL COUNCIL.

We, the undersigned, being, as deans and teachers of dental schools, fully conversant with the requirements of the dental student in order that he may obtain a range of knowledge sufficient to enable him intelligently to practise his profession, are strongly of opinion that it is undesirable to reduce the present scope of curriculum and examination in general subjects, which we regard as a minimum necessary for the satisfactory qualification of a dental surgeon.

STORER BENNETT,
Chairman of Medical Committee, Dental Hospital of London.

MORTON SMALE,
Dean, Dental Hospital of London.

Signed also by 26 other members of the staff of the hospital.

Petitions in identical terms were also forwarded from the following dental hospitals :—

(2) From the National Dental Hospital of London.

Signed by 19 members of the staff.

(3) From the Dental School, Guy's Hospital.

Signed by 18 members of the staff.

(4) From the Dental Hospital of Liverpool.

Signed by 12 members of the staff.

(5) From the Dental Hospital of Birmingham.

Signed by 14 members of the staff.

(6) From the Dental School of Edinburgh.

Signed by 7 members of the staff.

(7) From the Dental Hospital of Glasgow.

Signed by 15 members of the staff.

The following is the communication referred to by Mr. Smale as forwarded to him by the Staff of the Newcastle Dental School :—

9, Eldon Square, Newcastle-on-Tyne,

January 14, 1898.

DEAR MR. SMALE,—At a meeting of the teaching staff of the Newcastle-on-Tyne Dental Hospital and School, held last evening, at which your letter of the 5th, with enclosed petition, was read, the following resolution was passed :—“ That, having read the petition sent by Mr. Morton Smale, and having discussed the Report of the General Medical Council meeting, we are of opinion that the question of the dental curriculum should be left to the Dental Education and Examination Committee as suggested by Dr. MacAlister in his amendment.”

I am, yours truly,

R. W. MARKHAM,

Dean of the Newcastle-on-Tyne Dental Hospital and School.

Mr. BRYANT said that this was the fourth report the committee had made. The subject was started on May 26th, 1894, when the council decided upon the appointment of an inspector who should visit and report upon the examinations of the four bodies granting qualifications in dentistry, and Mr. Tomes was appointed inspector. He should like on this occasion to congratulate Mr. Tomes on appearing amongst them as a member of the Council. It was the first time the Council had included a representative of dental surgery, and he thought they would all agree that it was high time they had such a representative. He felt personally grateful that Mr. Tomes was here now because he would be able to assist the Council very much in this important work.

The Council decided to go into committee for the purpose of considering in detail the recommendations in the report.

Sir RICHARD THORNE said he should like to hear from some member of the Council what was meant by the expression “ Dental Surgeon ” found in the report, and in the letter of the Dental Hospital of London. He had always understood that a dental surgeon was a surgeon who was a dentist.

Dr. MACALISTER suggested that a dental surgeon was a person entitled to practise dental surgery under the Dentists Act.

Sir RICHARD THORNE asked whether the term was to be found in any Act of Parliament. Section 3 of the Dentists Act of 1878, said, that "a person shall not be entitled to take or use the name or title of 'dentist' (either alone or in combination with any other word or words) or of 'dental practitioner' or any name, title, addition or description implying that he is registered under this Act, or that he is a person specially qualified to practise dentistry unless he is registered under this Act."

Mr. HORSLEY said that he thought the Council should adhere closely to the words of the Act, and substitute in this report for "dental surgeon" the word "dentist."

The PRESIDENT (Sir William Turner) pointed out that in section 6 of the Dentists Act the reference was to any person who was "a licentiate in dental surgery or dentistry."

Sir RICHARD THORNE said he would be quite prepared to accept "a licentiate in dental surgery" or "dental practitioner."

Mr. BRYANT recommended the Council to use the latter term.

After some further discussion it was agreed that "dental practitioner" should be the term used throughout the report.

Mr. TOMES said that the term "dental surgeon" was an old one very much in use, and throughout the Dentists Act "dentistry" and "dental surgery" were practically used as synonymous.

On the motion of Mr. Bryant, seconded by Mr. Tomes, the first recommendation of the Committee was adopted without change.

The second was adopted with the addition of the following footnote: "See Regulations of the General Medical Council in regard to the Registration of Medical and Dental Students."

Coming to the third recommendation the Council adopted the first three sections of it without alteration.

Considerable discussion, however, arose upon the fourth section, which Mr. Bryant, seconded by Mr. Tomes, moved in this form "(IV.) That he has attended courses of instruction in the following general subjects at a recognised medical school for at least the period specified." Exception was taken to sub-section (a) Chemistry and physics (with practical laboratory work) for six months.

Dr. P. HERON WATSON said he would like to know whether these recommendations were to be absolutely and implicitly carried out, or whether there was a power of selection on the part of the different bodies.

Mr. BRYANT replied that he hoped the principles embodied in the recommendations would be carried out by all the bodies ; but he had no thought of unduly fettering the bodies ; or preventing them working out their own schemes in the way they considered best.

Dr. McVAIL said that in that case there would require to be some alteration in the wording of the report, because it was said that these recommendations were "for the guidance of the licensing bodies and of candidates for licenses." If the licensing bodies were free to exercise their discretion, he did not see how these recommendations would afford much guidance to the candidates. The recommendations might speak of one thing and the licensing body might prescribe something quite different when the candidate presented himself. As to this particular subsection he would point out that in the schools of Scotland, chemistry and physics were taught in separate classes, and consequently it meant that the student would require to take six months in chemistry in one session and not less than three months in physics in another session. Then, in addition, there was the laboratory work and there were no combined physical and chemical laboratories that he knew of anywhere in Scotland. If a man was to get laboratory work in physics, that would mean one course, and if he was to get it in chemistry it must mean another course, making four courses in all. The thing must really be better defined, or else they in Scotland must depart from the recommendations and break away from the system to be established in England. In his reports Mr. Tomes held up the English system as the typical system to which the smaller fry of Scotland and Ireland should at once assimilate themselves, and be glad to have such an admirable example to follow. Mr. Tomes was entitled to his own opinion and he must say that it afforded them in Scotland considerable amusement to read his reports. As the result of these reports the Council was now dealing with the thing from the beginning, and it must lay down directions which could be carried out in all the divisions of the Kingdom. This subsection was unworkable in Scotland.

Dr. MACALISTER said that it appeared at the present moment in the regulations of the Faculty of Physicians and Surgeons of Glasgow.

Dr. McVAIL replied that the words were merely put down to please this Council.

Mr. HORSLEY asked whether there was any reason why, though physics and chemistry were taught in different classes, they had not been taken by the student during the same session.

Dr. REID said that would not be possible in Aberdeen.

The PRESIDENT, however, said it was possible in the case of Edinburgh.

Dr. PETTIGREW insisted that the proposed arrangement would handicap the Scottish student.

Mr. TOMES said there was a middle course, which was indicated in the regulations of the Royal College of Surgeons, which simply required that a man should receive instruction at an institution recognised for the purpose in physics and chemistry.

Dr. MACALISTER also pointed out that the period mentioned in the recommendation was to be regarded as the minimum period.

Sir CHRISTOPHER NIXON thought that physics and chemistry should be treated as separate subjects; they ought to put down a special course of physics, say, three months, and then require the dental student to attend the same amount of instruction in chemistry as the medical student, namely, six months.

Dr. BENNETT suggested that a suitable course would be to require that the dental student received the same instruction in these subjects as the medical student.

Mr. TICHBORNE, seconded by Dr. PETTIGREW, moved that the subsection read:—"Chemistry, theoretical and practical course, six months; physics, three months." This amendment was negatived.

Sir CHRISTOPHER NIXON, seconded by Sir WILLIAM THOMSON moved that it read "Physics, a three months course; Chemistry, a six months course of theoretical chemistry; and a three months' course of practical chemistry." This amendment was also negatived.

The recommendation as put forward by the Committee in the report was then put to the Council and adopted.

The consideration of the other recommendations was postponed, and the Council thereafter sat in camera to receive a report from the solicitor with regard to certain prosecutions directed by the Council at its November meeting.

Saturday, May 28th.

PETITIONS FOR REGISTRATION.

At this sitting of the Council the president announced that petitions for admission to the Dentists' Register had been received

from Mr. A. P. Merrill, Mr. T. E. Bush, Mr. E. L. Oldfield and Mr. W. E. Royce, and that the Council had decided not to accede to the petitions.

AMENDMENT OF THE COMPANIES ACTS.

The PRESIDENT announced that the following resolution had been passed while the Council sat in camera, viz.:—Resolved, "That the President, Mr. Tomes and Mr. Horsley be a committee to take such steps as they deem most effective to induce the Government to insert a clause in the Companies Acts Amendment Bill now before Parliament, with the object of preventing the registration of companies to carry on medical, surgical and dental practice." Sir William Turner also announced that he had asked the President of the Board of Trade to receive a deputation on the subject.

Monday, May 30th.

THE CURRICULUM FOR DENTISTS.

The whole of this sitting of the Council was devoted to the further consideration of the recommendations of the Dental Education and Examination Committee as to the course of study and the examinations to be required of candidates for licences in dentistry or dental surgery.

In the first instance the proceedings were conducted in committee of the whole Council.

Mr. BRYAN, chairman of the Dental Committee, expressed the hope that on this occasion they would make more rapid progress than they did on Friday. He assured the Council that there was nothing in any of the recommendations to interfere with the scheme of education which any one of the four licensing bodies was carrying out at the present moment; all that was suggested was that certain general principles should be observed. He begged to move subsection B of Section IV., read "Human anatomy for six months."

Dr. BRUCE moved as an amendment "That the words in Sections IV. and V. of the report of the Dental Education and Examination Committee fixing particular periods for the courses of instruction specified after line 8, page 7, Appendix I., be deleted, and that the subjects of professional study and examination be drawn up upon parallel lines to those for professional examination for medical students, and become requirements of the General Medical Council

for candidates for licenses in dentistry or dental surgery." He urged that it was quite unnecessary to name any particular time for the courses, and that it would be a wiser course if they followed the lines adopted in the case of the medical student. He felt sure it would contribute to the efficiency of dental education.

Dr. LEECH seconded the amendment.

Sir DYCE DUCKWORTH said that the Council had no power to make requirements in this connection, it could only recommend.

Dr. McVAIL said he would like to know what Dr. Bruce meant by parallel lines? If he meant that the dental student was to take the ordinary subjects of the medical curriculum and was to be examined in them in the same way as the medical student, then he was prepared to support him. He had drawn up an amendment which he was prepared to move to remit the report back to the committee that they might consider and report as to how far the medical and surgical education and examination of dental students should correspond to the education and examination required in the case of medical students. Mr. Bryant would appreciate the difficulty of getting on with this report. The fault did not lie with the Dental Committee or with Mr. Bryant as its chairman, for they had endeavoured most conscientiously to bring about a settlement, but it happened that the question was not one which could be adjusted. The Act of 1878 was a most unfortunate Act. When they got the Public Health Act and public health diplomas it was plain sailing, for there was special education and special examination in addition to the ordinary medical and surgical training. But here the case was different. As Sir Richard Thorne had said on a former occasion, they were dealing with a mongrel profession in this curriculum—

Sir RICHARD THORNE: What I said was that they would be mongrel doctors.

Dr. McVAIL said that at any rate he used the word "mongrel" as applicable to this branch of the profession and to no other. He (Dr. McVail) thought the time had come to consider what was to be the real position of the dentist in the future. Was the dentist still to be a man of inferior medical and surgical training with a few specialisms; or was he to have knowledge such as members of the medical profession had and dental knowledge in addition? His own impression was that the time had now come when the dentist ought to be a surgeon, when the dentist ought to have a knowledge

of surgery as complete as the ordinary person going into the practice of the profession in the ordinary way. If he chose to go on into dentistry in addition to that, he might do so. But he thought the profession ought to be elevated and should no longer consist of men who had an imperfect education in medicine and general surgery and some special knowledge of certain departments. It would be very much better if the committee would consider how far now this Council would be justified in asking that dentists should have a professional knowledge of surgery and medicine such as ordinary members of the profession had. To say that they would be starving the dental profession was absurd ; dentists were as plentiful as blackberries. There would be no starvation in the matter. It seemed to him that if they put them on the same level of education and examination as the ordinary medical student, they would really bring them to be true colleagues of themselves, and in that way make them a reputable profession. Because, though they had a separate register, dentists were really members of their profession. He was glad to find that other members of the Council were thinking in the same way, and that Dr. Bruce and Dr. Leech were prepared to take the step they proposed.

Dr. MACALISTER said that the position of Dr. McVail seemed to be one of simple obstruction to everything. The last time they discussed this matter he was prepared to raise all these figures to 12 months or more, and now he was prepared to leave them out altogether. His attitude was like that of the opponents to the Home Rule Bill ; he wanted to smash the whole scheme.

Dr. McVAIL said that he must take exception to this view of his position. He had thought this matter out very carefully, and he had seen the difficulties of the committee. They were endeavouring to reconcile two things which were irreconcilable. His hope was to see the dental profession put upon a proper footing, and its members become worthy colleagues of their surgical brethren, and it was with that view, and not with any thought of obstruction, that he had acted as he had done. If Dr. MacAlister meant obstruction to this scheme, well, as this scheme stood, he did oppose it, because it was to him entirely unsatisfactory.

Sir RICHARD THORNE said he could not help thinking it was a pity that they had not had a general discussion on this scheme as a whole before they took up the details of it.

The PRESIDENT, interrupting Sir Richard, said that the amendment had been revised and put into this form, viz. : "That the words in sections IV. and V. of the report of the Dental Education and Examination Committee, fixing particular periods for the courses of instruction specified after line 8, page 7, Appendix I., be deleted, and that the subjects of professional study and examination be specified as in the recommendations for the professional education of medical students, without the duration of instruction in each subject being defined, and become recommendations of the General Medical Council for candidates for licenses in dentistry and dental surgery."

Sir RICHARD THORNE said he should be obliged to vote against that. His point was this, that as long as this Act remained as it was, and as long as they dealt with dental education as he thought they ought to do, they ought in justice to their own profession to draw an absolute line between the surgeon who practised dentistry and the licentiate in dentistry. He had sought the opinion of many dental surgeons—or as he should call them, surgeons practising dentistry—and he had not met one who was not opposed to the report of this committee. This was an attempt to educate men in medicine and surgery, and one of its effects would be to induce dentists to pretend that they had had a medical education. He would give an illustration of what he meant. A gentleman came here from a distant part of the Empire, a gentleman with a good deal of information about diplomas, and he consulted a dentist in one of the West End squares. One day when he went to him he was not feeling well, and he incidentally explained his symptoms. The dentist referred to the symptoms and added "Do you know I am a doctor?" The gentleman said "I was not aware of that. What are your medical qualifications?" "Oh, I don't mean that," said the dentist, "What I mean is that I have had to go through a complete medical education." In this scheme they were requiring of these licentiates in dentistry that they should go through a six months' course in the principles of medicine, and that they should be occupied in a course of clinical medicine at a recognised general hospital for twelve months, and yet, would the Council believe it, the committee did not deem it necessary that the candidates should be asked a single question in medicine. A greater anomaly he never heard of in the course of his life. Did not that justify the man in saying that he had gone through the whole medical

curriculum? There was no thought of testing his knowledge. He knew there were certain bodies who were doing their utmost to guide this dental education into a medical education. He had no objection if this Council were to decide that for the future the dentist should really be a dental surgeon—that was to say a surgeon practising in dentistry. But he said most emphatically that this course, as laid down by the Committee, was wrong in principle. Coming to Section V. of the recommendations, they would see at a glance that while the medical courses were long the dental courses were short. The Council would remember the circumstances in which the report was referred back to the committee. He had moved that the report be referred back to the committee to consider whether they could not compile a series of recommendations which would be better adapted to the practice of dentistry and less adapted to the practice of medicine. That was the ground upon which the reference was to be made. Somebody suggested that it should be a simple reference back, and he withdrew his motion. He submitted therefore that the whole spirit of the reference had been disregarded. Many members of the dental profession believed this scheme to be a deliberate wrong to the dental student, saying that if he had these long courses of medical work to see to, he could not do justice to his proper dental work, and with this view he entirely agreed. It was said that when the dental student had to sit at these lectures on medicine, on pneumonia, peritonitis, scarlet fever, typhoid fever, and all the other fevers, the best way in which he could spend his time would be to put his book before him and do his best with his dental studies, notwithstanding the lecture. It was a distinct wrong to the dental student, who had only the short four years in which to fit himself for his career of dentistry, and he thought it was a still greater wrong to the medical practitioners to give this unnecessary medical education to any other than medical students. He went further, and he said it deliberately defeated the principal provision of the Medical Act of 1858, which was designed to enable members of the public requiring medical aid to distinguish between qualified and unqualified practitioners. He had drawn up a motion to this effect, that: “Since the Dental committee deem it unnecessary to require candidates for the license in dentistry to undergo any examination whatever in medicine, the requirement that they should attend a course of at

least six months on the principles of medicine, and a course of clinical medicine at a general hospital extending over at least twelve months be eliminated from the regulations and the time thus saved be devoted to dental work properly so-called."

Mr. TOMES said he would try to avoid advocating his own opinions on this subject, and give to the Council the facts of the case in order that members might themselves form their own opinions. The opinions he would put forward would be rather the opinions of others than his own. When there was no dental licentiateship and no dental curriculum—that was to say prior to 1858—the question was very much thought out by the dentists, who at the time were in a leading position, and the result of their debating the matter and the result of very carefully studying what had been done in the way of dental education in America, was the conclusion that the American curriculum was good upon its purely dental side, but that it did not give the student a sufficiently wide education in those things which came on the borderland between medicine and surgery and merely operative dentistry; that it did not give him a sufficient amount of information upon that side to make him a thoroughly satisfactory practitioner. It was equally recognised that an ordinary medical training did not make a good dentist. With reference to what Dr. McVail had said, he was quite at one with him; he should very much like to see the dentists of this country fully qualified medical practitioners with a dental education added. He should like to see that, and he hoped that some day in the future it might be practicable; but at this moment he did not think it was practicable. What it meant was that a man was to get his full medical education, which involved steady and constant application for four or five years, and in addition he was to get his dental education, which would take a very considerable period beyond the four or five years. To be educated on these lines meant a course of study extending over six or seven years, and that he did not think was practicable at the present moment. As to the present curriculum, whether it was good or bad, that was no new question. It had cropped up from time to time. It cropped up when the Dentists Act was passed, and it had cropped up since, and almost all that had been said on this occasion had been said before. A good many years ago the Royal College of Surgeons of England held an inquiry into this very matter, and they had before them a number of dentists representing all phases of opinion.

After the inquiry the College did not see fit to in any respect alter the curriculum or the examination. Sir Richard Thorne had deprecated upon this occasion rather strongly, and upon a previous occasion more strongly, the necessity for a dentist having a medical education or a partial medical education. He had deprecated it upon several grounds. He hoped he did not misrepresent him.

SIR RICHARD THORNE : It is an absolute and complete misrepresentation.

MR. TOMES : I understood that Sir Richard Thorne would like to strike out a good deal from the medical side of this education at all events.

SIR RICHARD THORNE : The only instance I took was teaching a man for 18 months in medicine and not thinking it worth while to ask him a single question in it. I do object to weighing the education with purely medical and surgical matters instead of weighing it with dental matters.

MR. TOMES said that he attached very great importance to the medical and surgical side of the education. It was just this that they objected to in the American curriculum, and it was because of the absence of this education that they had refused to recognize the American diplomas. They had rather been the pioneers in England in introducing into dental education that side, and he thought it would be strange indeed if, at this moment, when all the best dental opinion in America was advocating that more should be done in the way of educating their students in general hospitals on the general side, that we, who were the pioneers in that respect, should give a lead in the direction of diminishing it. It was necessary for the dentist not merely to acquire manipulative skill ; that was essential to him, and over that he must spend a large part of his time ; but he had also got to exercise judgment constantly, and another thing, he could give Sir Richard Thorne many instances of the great desirability of the dentist possessing medical knowledge. It was under his eyes that the various serious diseases of the mouth, various forms of malignant disease fell first.

SIR RICHARD THORNE : That is not medicine ; it is surgery.

MR. TOMES said that he was not by any means nailing his colours to the mast on the question of the medical course. The dentist was the person who had the earliest opportunity of recognizing malignant and other serious diseases. If Sir Richard Thorne wanted an instance

it was not so long since a case of mumps was sent to him by a medical practitioner, under the impression that the swelling of the glands was of dental origin. Then there was the question as to whether they were going to distinguish the surgeon practising dentistry from the dentist pure and simple. In this connection there was, of course, the legal view ; but the real issue was whether it was desirable to emphasise the distinction. Some 20 years ago a society was formed which called itself the " Association of Surgeons Practising Dental Surgery," and it was the object of the Association to emphasise this distinction. And they got a certain number of medical men who were not practising dentistry to enrol themselves in the Society with this object. They never published any list of members or any proceedings that would enable one to speak with absolute certainty, but the great majority of the dentists at the time who possessed surgical qualifications withheld themselves from the Society. It was numerically very small, and it died a natural death in one or two years, because the dentists who held medical qualifications regarded it as a thing very much to be avoided, and as a thing which would hinder them enormously in raising the general status of dentistry, and they did so, because of what he had already alluded to, the impracticability of making every dentist a medical man in the present order of things. Under the present curriculum, practically speaking, some 1,600 people had been educated and the net result had been exceedingly good. The dentist of to-day was on a wholly different plane in respect of education and the attainments which made him a good dentist in his every day practice from the dentist of former days, and he did not think they would do well to lightly throw aside the result of 40 years' practical experience because of an evil which after all was more or less a theoretical one. He did not think that the thing complained of had happened. He did not think that the dental licentiate had poached or had shown the smallest disposition to poach upon medical practice. He did not think that he had shown the smallest disposition to pose as a duly qualified medical man. No instance had come before him personally, and he had never heard of one. He had heard of a dentist who was not a licentiate in dental surgery ; he had heard of a dentist who was not upon the Dental Register doing so. It was the uneducated person who did this, not the person who had received an education which taught him the limits of his own knowledge, and which taught him

when to seek the advice of a qualified medical man and when to keep a case in his own hands. He did not believe for one moment that the education which the dental student received would have any other effect in his practice than of enabling him intelligently to know when he should seek advice. He would not labour the point at greater length, but simply say that he did not believe that the danger Sir Richard Thorne anticipated was a real one. He considered it disproved by experience ; and as to the proposition of Dr. McVail that the dentist should be compelled to take the full medical curriculum, he said it was not practicable in the existing state of things.

Mr. BRUDENELL CARTER addressed to Mr. Tomes a question with regard to the practical advantages to a dentist of a knowledge of the general principles of medicine.

Mr. TOMES, in reply, said that in the every day practice of a dentist a knowledge of general pathology came in. Hardly a day would pass, if a dentist were in a large practice, without his seeing and having to form an opinion about the things which were on the border line where he hardly knew whether the trouble was local or whether it was constitutional.

Dr. MACALISTER, speaking in support of the original motion, pointed out that as these were recommendations merely, and not requirements, there could be little harm in going into details as the committee proposed. In the case of the medical curriculum, the Council dealt in requirements. Another point was that while medical education and examination had been going on for a very long time, and their principles were well established, dental education and examination were much more recent. As to the dental curriculum, what they wanted to do was to make the dentists professional men in the best sense of the word ; proud of their profession, desirous to uphold its honour, and likely to advance it so far as it was a science, and how could they do that except by educating them not only in the use of the fingers, but also in the use of the mind and the eyes. The means of educating them in this way was very much like the means of educating the medical student, namely, that of putting them into the wards, and seeing them through a course of science in order that they may be cultured men in the broadest sense of the word. It seemed to him, therefore, that to give them the opportunity of learning, not the

practice of surgery, but the principles of surgery ; not the practice of medicine, but its principles, was giving them exactly the insight into fundamental principles and methods which was most desirable. He thought it would be a great mistake if they cut down in either of these respects what had been proposed by the committee.

The amendment of Dr. Bruce was then put from the Chair, and negatived by a large majority.

Mr. BRYANT announced that he would amalgamate subsections B and C, and make the proposal read : "human anatomy for six months and dissections with demonstrations for 12 months."

In this form the proposal was put to the Council and passed.

Subsections D and E were passed without debate, in the case of the latter the initial words "principles of" were deleted.

Mr. BRYANT moved the adoption of subsection F in this form, "medicine, including the elements of general pathology for six months."

Sir CHRISTOPHER NIXON and Dr. LITTLE said it would be extremely difficult to carry out this recommendation in Ireland.

Mr. BRYANT explained that what was in view was the ordinary course given to the medical student.

Sir RICHARD THORNE, seconded by Sir JOHN BATTY TUKE, moved as an amendment : "That since the Dental Committee deem it unnecessary to require candidates for the license in dentistry to undergo any examination whatever in medicine, the requirement that they shall attend a course of at least six months in medicine, and a course of clinical medicine at a general hospital extending over at least twelve months, be eliminated from the regulations."

Mr. BROWN said that it appeared to him perfectly inconsistent that the committee should recommend this course of instruction and not require examination upon it.

Sir CHRISTOPHER NIXON took the view that if there was to be no examination that afforded a good reason for eliminating the proposed course of instruction.

The amendment was negatived by 15 to 11 votes four members refraining from voting on either side.

Thereafter the recommendation of the committee was agreed to.

Mr. BRYANT moved subsection G in this form : "clinical surgery and medicine at a recognised general hospital for twelve months."

Dr. McVAIL moved to delete the word "medicine," what the committee proposed was, he said, a sham course and a complete burlesque of medical education.

Sir CHRISTOPHER NIXON seconded the amendment.

The amendment was negatived by 18 to 11 votes.

Dr. McVAIL then moved to make the recommendation read: "clinical surgery during nine months and subsequently clinical medicine during six months at a recognised general hospital."

Dr. HERON WATSON seconded this amendment. On a vote being taken, it received the support of only two members.

The recommendation of the Committee was then put from the Chair and carried.

The Council now reached section V., in the introductory sentence of which it inserted the words: "for at least the period specified."

Subsection A was passed without debate.

Mr. BRYANT moved subsection B, and explained that the committee had thought it expedient not to go in for a whole course of *materia medica*.

After a short discussion the subsection was passed in this form: "Dental pathology and surgery, with *materia medica* and therapeutics applicable to dental surgery for three months."

Mr. BRYANT, in moving subsection C, said that here the committee were deviating a little from what had been done hitherto. Hitherto metallurgy had held a very unsatisfactory position in the education of the dentist, and it was now sought to improve it. There had been a little inconsistency in the teaching, but the committee thought it better to make it plain that the student should be required to take a special course of work in metallurgy.

Mr. TOMES spoke in support of the recommendation.

The subsection was then passed by the Council, as was also subsection D and sections VI. and VII.

Coming to the recommendations with regard to the professional examinations, the Council passed subsections A and B as proposed. Subsection C was made to read: "Dental anatomy, physiology, pathology and surgery, with *materia medica* applicable to dental surgery." Subsection D was passed as proposed, while E was made to read: "Human anatomy and physiology."

Mr. BRYANT moved subsection F in this form: "Principles of surgery and medicine in their application to dental surgery," with a recommendation that a synopsis of the scope of the examination in these subjects be issued by the licensing bodies.

Dr. McVAIL suggested that it was a waste of time for this Council to draw up recommendations if the licensing bodies were to be left free to prepare a synopsis of the scope of the examination.

After some further debate the subsection was approved by the Council.

The last recommendation was adopted with an amendment providing that the subjects "may be taken at two or more successive stages during the course of professional study."

This concluded the business in committee, and the Council resuming confirmed what the committee had done.

The PRESIDENT congratulated the Council on having got through what he described as a very important and difficult piece of business.

The final form of the recommendations is as follows:—

RECOMMENDATIONS AS TO THE COURSE OF STUDY AND EXAMINATIONS
TO BE REQUIRED OF CANDIDATES FOR LICENSES IN DENTISTRY
OR DENTAL SURGERY.

A. Preliminary Examination and Registration.

1. That every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students.

2. That no person shall be registered as a dental student who has not previously passed one of the preliminary examinations in general education recognised by the Council, unless before July 22, 1878, he commenced professional study by apprenticeship to a dentist entitled to be registered or by attendance on professional lectures.

* * See Regulations of the General Medical Council in regard to the registration of medical and dental students.

B. Professional Study.

3. That every candidate for a licence in dentistry or dental surgery shall be required to produce certificates showing:—

(i.) That he is at least 21 years of age.

(ii.) That he has been registered as a dental student.

(iii.) That he has subsequently to the date of registration been engaged in professional study for at least four years. [Not more

than one year of *bonâ fide* apprenticeship to a registered dentist, if served subsequently to the date of registration, may be reckoned as a portion of the four years of professional study required.]

(iv.) That he has attended courses of instruction in the following general subjects, at a recognised medical school for at least the period specified :—(a) Chemistry and physics (with practical laboratory work for six months). [This instruction may be obtained at a science school recognised by the licensing body]; (b) Human anatomy for six months, and dissections (with demonstrations) for 12 months; (c) Physiology for six months (with practical laboratory work or a separate course of practical physiology); (d) Surgery (including the elements of general pathology) for six months; (e) Medicine (including the elements of general pathology) for six months; (f) Clinical surgery and medicine (at a recognised general hospital) for 12 months.

(v.) That he has attended courses of instruction in the following special subjects at a recognised dental school for at least the period specified :—(a) Dental anatomy and physiology, human and comparative (with practical work and demonstrations in dental histology), for three months; (b) Dental pathology and surgery with materia medica and therapeutics in their application to dental surgery for three months; (c) Dental metallurgy (with practical work and demonstrations) for three months; (d) Dental mechanics (with practical work and demonstrations) for three months.

(vi.) That he has for two years attended the practice of a recognised dental hospital, or of the recognised dental department of a general hospital.

(vii.) That he has, before or after registration as a dental student, received for three years practical instruction in mechanical dentistry from a registered dentist, or in the mechanical department of a recognised dental school and hospital.

* * No portion of this instruction which is anterior to the date of registration shall be reckoned as a portion of the four years of professional study required.

C. Professional Examinations.

4. That the examinations for a license in dentistry or dental surgery shall be partly written, partly oral, and partly practical, and shall include the following subjects :—(a) Chemistry and physics; (b) Practical examination in dental mechanics and metallurgy

(c) Dental anatomy, physiology, pathology, surgery, with materia medica and therapeutics in their application to dental surgery ; (d) Practical examination in dental surgery ; (e) Human anatomy and physiology ; (f) Principles of surgery and medicine in their application to dental surgery. Referring to the two last mentioned subjects—[It is recommended that a synopsis of the scope of the examination in these subjects be issued by the licensing bodies.]

5. That the prescribed subjects of examination may be combined or distributed at the discretion of the licensing bodies, and may be taken at two or more successive stages during the course of professional study ; provided that no candidate shall be admitted to any final examination in dental surgery and mechanical dentistry until he shall have completed the required four years' course.

Tuesday, May 31st.

THE SUGGESTED AMALGAMATION OF THE SCOTTISH LICENSING BODIES.

Mr. BRYANT read the following report from the Dental Education and Examination Committee, viz. :—

The committee was asked by the then acting chairman of this Council, to refer again to a subject which the chairman would gladly have let drop, had it not been discussed by two members of the Council with a warmth which is, happily, unusual in our debates. We refer to a suggestion made by this committee in December, 1896 : "That the two Scotch dental boards should unite and form one conjoint board, so that there would then be but one dental licensing body in each division of the United Kingdom." Very strong objection was taken to this suggestion on the ground that it was made "as if the two bodies of Scotland had never wanted to unite until this committee drew attention to the matter" ; whereas the two members of the Council whose warmth in the discussion has already been referred to assured the Council that the question of union had been before the governing bodies of both colleges "time and again," and was found impracticable on account of its not being consonant with the Dental Act. It must, however, be stated that this oral information was absolutely new to the committee ; indeed, it must be added that such information was quite inconsistent with the evidence which had been supplied to the committee by the two Scotch licensing bodies themselves, as witnessed by the remarks of these bodies which they had

been invited to make upon the first report of this committee, in which the suggestion which has given such offence is to be found. The Faculty of Physicians and Surgeons of Glasgow, instead of making any allusions to past negotiations, referred the suggestion to their legal adviser for his opinion, which they printed in full; and this they would hardly have done had the question been raised and settled years before. The Royal College of Surgeons of Edinburgh—with equal silence as to the past—reported that the suggestion had been carefully considered by the president's council, and was subsequently reported to the Royal College, when it was unanimously resolved, "that in the opinion of the president's council such a proceeding would be detrimental to the position and privileges of the college," and in that of the college, "that the recommendation of this committee should not be entertained." The college, in its curt answer, made no allusion to past attempts to carry out the suggestion or even to any legal difficulties of the case. In fact both faculty and college dealt with the suggestion of your committee as if it had been entirely new. The committee, however, not being satisfied with this evidence, which seemed to be so inconsistent with the oral evidence of the two aggrieved members of this Council, subsequently made an appeal to the two Scotch examining bodies themselves, through their representatives upon this Council, to supply the committee with such information as might be gathered from the minutes of their respective bodies upon the point which had been raised; and as a result of this inquiry your committee have now to report that so far as the Faculty of Physicians and Surgeons of Glasgow is concerned "no record or other indication of there ever having been any negotiations of the kind referred to can be found." And the representative of the Royal College of Surgeons of Edinburgh upon this Council reports that the college minutes only narrate the results of matters actually brought before the college, either directly or on report, and that the question of the formation of a conjoint Scotch board was not one of them. Dr. Watson gives, however, in his letter appended hereto, some of his recollections upon the question raised, and the committee have therefore thought it wise to print his letter in full in an appendix.

From a full consideration of these facts which have been placed before you, your committee can see no reason why they should withdraw their suggestion as requested, but propose to leave it as it stands

in the third report ; they feel, however, that they may fairly ask this Council to consider how far the expressions which have been applied to the suggestion can be justified.

Mr. BRYANT said that he would either read the letter of Dr. Heron Watson or he would leave Dr. Heron Watson to read it himself. In the whole of this matter he had no personal feeling whatever, but he thought it very unfortunate that the Committee in its important and difficult work should be met with such observations as those of Dr. McVail and Dr. Heron Watson.

The PRESIDENT said that the explanation of Mr. Bryant referred to two members of the Council. He thought it only right that these two gentlemen should have an opportunity of saying what they wished to say in connection with the matter, but he would rule that there should be no debate, and that with the statements of the two members in question the incident should close.

Dr. HERON WATSON then addressed the Council. He insisted that the report of the Committee in its reference to the two Scottish bodies justified his observation that the passage as it stood was nothing short of an impertinence. He had not said that Mr. Bryant was impertinent, nor had he said that the Committee was so, but the passage in question was an impertinence in respect that it was wholly irrelevant. The Act of Parliament distinctly indicated that severally and separately the Royal College of Surgeons of Edinburgh and the Faculty of Glasgow should hold an examination, and there was no suggestion that there should be a combination, but the Committee thought themselves far wiser than the Act of Parliament. The letter he wrote to Mr. Bryant was in the following terms, viz:—

“DEAR MR. BRYANT,—When the question of dental legislation was first mooted, the Edinburgh College of Surgeons remitted the matter to a dental committee to watch the movement, both as regarded the dental profession and also any steps leading to the introduction of a dental bill into parliament, with an instruction to report upon the subject as occasion might direct. The only subjects, pursuant to this remit, upon which the committee reported to the college were (1) The application of the dental profession in Scotland that the college of surgeons should apply in the event of dental legislation for powers to grant a diploma in dental surgery ; (2) upon certain provisions contained in the dental bill, with (3) a recommendation that the college should petition parliament suggesting

amendments on the bill with the view of removing these objections ; and (4) after the act was passed, submitting details of a scheme for granting a diploma in dentistry under the provisions of that Act, in respect of the requirements for preliminary education, professional education in dentistry, and commensurate regulations for examinations for the diploma and for the appointment of examiners.

"The committee did not communicate to the college reports upon any other matters which were submitted to consideration, but in respect of which it did not recommend that any action should be taken by the college.

"At that period minutes were not kept of the agenda at meetings of any of the committees of the college, and the college minutes only narrate the results of matters actually brought before the college, either directly or on report.

"The dental question came before the college after my election as president of the college, and when therefore as president I was *ex officio* chairman of all meetings of the dental committee of the college. in this way the matters taken up by the dental committee were impressed upon my recollection more vividly than might otherwise have been the case.

"In this regard I have a distinct recollection that full consideration was given to this proposal that a conjoint examining board should be formed by the college of surgeons with the faculty of physicians and surgeons of Glasgow for the conduct of dental examination in Scotland, framed upon the analogies of the double (1859) and afterwards of the triple qualification for Scotland in medicine, surgery and midwifery (1864). I also recollect that these proposals were both negatived, because (1) they received no sanction from the provisions of the Dental Act, and also (2) because, as the treasurer of that period reminded me, when during the discussion, on pencilling a rough calculation of the cost, he was able to show that such a conjoint examination could not be conducted so as to be remunerative to the college and faculty unless the fees charged were on a scale which would prove exclusive to candidates for the dental diploma and not therefore "reasonable fees" in the sense in which the term is employed in the Dentists Act 1878, section 20, for the college and faculty to direct as a charge."

Dr. McVAIL said that he had objected to the passage in the report because it conveyed the impression that the Scottish bodies

were contumacious and refused to unite. If the committee had been prepared to argue that the Act gave them the power to unite, good and well ; but they were not prepared to do that, and yet the committee lectures the two bodies. That, in his opinion, was an "offensive" thing. It was not a defensive procedure. It was detrimental to the bodies and injurious to their character. But the report which had now been read put the matter in a different position. In effect it said that Dr. Heron Watson and he had told the Council that which was not true, and therefore the matter could not be allowed to rest in its present position.

The PRESIDENT said that the incident must now close. He would like to say this as regards himself that he felt that Dr. McVail and Dr. Heron Watson had both made an explanation which seemed to him to put the matter upon a correct footing, namely, that the two bodies in Scotland, through their representative men, had inquired into this question, and had come to a resolution that there was no power in the Act for them to make a combination. He did not know whether Dr. McVail felt that it was sufficient for him to say that.

Dr. McVAIL said that this statement from the President after hearing the case was entirely sufficient so far as he was concerned.

The incident then closed.

THE EXECUTIVE COMMITTEE AND THE DENTISTS ACT.

Mr. VICTOR HORSLEY moved to rescind the standing order which said : "the Executive Committee shall carry out generally the provisions of the Dentists Act in accordance with the Council's resolutions thereon." He insisted that under the Act the Council could not delegate its powers to the Executive Committee.

The motion was carried by nine votes to eight ; no fewer than 13 members declining to vote.

At a later stage in the proceedings power was given to the Executive Committee to receive and consider all applications and communications relating to dental business other than matters pertaining to the Dental Committee, and to report thereon to the Council.

THE EMPLOYMENT OF UNQUALIFIED PERSONS.

THE following letter was referred to a Committee consisting of members of the Dental Committee :—

“British Dental Association,

“40, Leicester Square, London, W.C.,

“February 12, 1898.

“Dear Sir,—Certain members of the dental profession, who possess medical qualifications, have received an important notice from the Medical Council as to the employment of unqualified persons and assistants. On behalf of the British Dental Association I beg to submit that the time has arrived when a somewhat similar notice as regards ‘covering’ might be sent to all dentists, or that the notice issued to the dental profession by the Medical Council, in 1893, might be repeated. The notice of 1893 was found to be of much service in helping to check the spread of the practice of ‘covering’ as members of the Executive of this Association have reason to know; and it is felt that the issue of another notice at the present moment would, as a preventive measure, be most opportune, and saving of both time and money to the Council in the investigation and consideration of future cases.

“As a minor matter I might remind you that Mr. Miller utilized the opportunity of coupling with the 1893 warning notice a means for further correcting the address entries of dentists in the Register. I shall feel obliged if you bring this request to the notice of the Executive Committee at the earliest moment.

“I am, dear Sir,

“Yours truly,

“W. B. PATERSON,

“*Hon. Secretary of the British Dental Association.*

“*To the Registrar of the GENERAL MEDICAL COUNCIL.*”

The same reference was made in the case of the next item on the programme, viz.:—The following communication, referred by the Executive Committee to the General Council, from the Dundee and District Branch of the British Medical Association as to the administration of anæsthetics by registered medical practitioners for unregistered dental practitioners—a practice which in the opinion of the Executive Committee is most reprehensible:—

“Annfield House, Dundee,

“March 10, 1898.

“COVERING UNREGISTERED DENTAL PRACTICE.

“Dear Sir,—I have been asked by the Council of this branch to ask you whether the recent notice issued by the General Medical Council will extend to the case of a registered medical practitioner,

who by administering anæsthetics for dental operations by persons not registered under the Dental Acts gives countenance to this most objectionable form of practice. If the question has not yet been considered, you might bring it under the notice of the General Medical Council at its next meeting. I have been corresponding with Mr. Robertson, and he has referred me to you.

"I am, yours sincerely,

"R. C. BUIST, M.D.,

"H. E. ALLEN, Esq."

"Hon. Sec.

DENTAL FINANCE.

The Finance Committee reported that the receipts of the Dental Registration Fund for 1897 were £831 17s. 9d., and the expenditure £941 5s. 9d., being £109 8s. in excess of the income.

This was all the business of interest to the dental profession.

Law Reports.

FLETCHER v. GOODMAN.

At the Cardiff County Court, on Thursday, May 5th, before his Honour Judge Owen, the plaintiff, Mrs. Marion Fletcher, of Glamorgan Street, Canton, sued Messrs. Goodman & Co., who advertised themselves as dentists, of 56, Queen Street, Cardiff, for £50 as damages and compensation for personal injuries sustained by defendants' negligence. Mr. J. Sankey appeared for the plaintiff, and Mr. C. M. Bailhache for the defendants.

At the outset Mr. Bailhache applied for an adjournment on the ground that one of the partners was prevented from attending through having dislocated his shoulder. Mr. Sankey opposed the application. The defendants' solicitor had intimated his intention of applying for an adjournment, as he would be professionally engaged elsewhere on the court day. On being informed that this application would be opposed, he then intimated that one of the partners had dislocated his shoulder. The Judge declined to grant the application, and Mr. Bailhache then withdrew from the case.

Mr. Sankey having opened the case, the plaintiff was called, and incidentally mentioned that the man who had operated upon her teeth at Goodman's was in court. Witness pointed him out.

The person, who in answer to the Judge said his name was Stephens, admitted that he was the individual referred to.

The Judge, with this knowledge before him, said a more impudent attempt to postpone a trial he had never heard. He, of course, entirely accepted Mr. Bailhache's explanation that he was only acting on instructions.

Witness bore out counsel's opening statement, and continuing said that the man Stephens, after looking at her mouth, pronounced it to be in a very bad state, and said that her mouth was of the

shape which rendered a five guinea set necessary. The following day she revisited the surgery. Stephens told her he could cut the teeth off and fit new ones on to the top. In reply to a suggestion of a lady friend who was with her, he said he would certainly not think of extracting them. He then cut away all the top teeth except one, and all the other stumps he snapped off with something like a pincers, the bits flying all over the room. He then, the same afternoon, "dabbed" something into her mouth to take an impression for the new set.

The Judge : What, immediately after ?

The Witness : Yes ; and the next day (Saturday) I had the new set in. Proceeding, witness said the following Monday night she found she could not wear them. Her mouth got into a most offensive condition, her health began to suffer, and she eventually consulted Dr. Mullin and Mr. Quinlan.

Dr. Mullin, who was then called, deposed that when plaintiff came to consult him on the 22nd November he found her suffering from inflamed and lacerated gums, from which there was a discharge, and the teeth were broken off. She was also suffering from dyspeptic and gastric trouble as the result of not being able to masticate her food. The treatment to which she had been subjected was most improper from a medical and dental point of view.

Mr. Quinlan, dental surgeon, of Cowbridge Road, the next witness, said when he examined the plaintiff on the 23rd November he found that the remains of her teeth were bathed in matter, and that a number of sound teeth had been broken off. Her mouth was in a shocking condition, and it was the worst case he had ever seen. He eventually extracted 22 stumps for her. The treatment as described by witness was exceedingly improper.

The man Stephens, after being informed that he might give evidence if he pleased, but was not obliged to do so, took his place in the witness box. In answer to Mr. Sankey he said he was only a dental mechanic, and not therefore a qualified dentist.

The Judge : What right have you to perform an operation ?

Inquiring whether there was a Medical Society in Cardiff, and receiving an affirmative reply, his Honour expressed the hope that they would take note of the case.

Witness admitted having performed the "operation" on the plaintiff.

The Judge : Call it butchery.

Witness added that plaintiff was, however, afterwards seen by Mr. Morgan. It was not true that he splintered the teeth. He cut them off, at plaintiff's express wish, with cutters, and not one of them so dealt with was sound. He never cut or removed a tooth unless a patient desired it.

The Judge : Did you take a model of the mouth immediately after ?

Witness : Every dentist does that.

The Judge : And the gums were inflamed ?

Witness : They were not inflamed.

In answer to further questions, he said the set put in was a "temporary case." Mrs. Fletcher never made any complaint to

them. The fee of a guinea was not meant to cover the cost of a complete set of teeth for the whole mouth, and this was made plain on their advertisement cards. He had not one of the cards with him. (Laughter.)

Charles Morgan, who had been described by the previous witness as the qualified dentist in attendance, next submitted to the ordeal of a cross-examination. He stated he was a registered dentist, and although his address was given in the professional register as of Wimbledon he had been living in Cardiff for the last nine months.

The Judge: I do not know what the Registrars would say to that.

Continuing, witness said he did not see plaintiff until some time after the "operation." Her mouth was then in a filthy condition, but he attributed this to her want of care in keeping the plate clean. Witness was not one of the firm, but was only the manager in charge of the Cardiff business. He had been connected with the company for 18 months, and his registered address at Wimbledon was explained by the fact that he had an interest in a practice there. He paid himself his salary out of the takings at Cardiff, remitting what remained after the defrayal of all expenses to the firm, of whom he believed Mr. Victor Goodman was a qualified dentist. He had heard of Messrs. Goodman having paid sums of money to compromise similar cases to this.

Mr. Sankey: Is not this a correct statement of the case? You are a registered practitioner, you get what money you can, take a certain sum out of it, and remit the balance to unregistered practitioners.

Witness: That is the sum total of it.

Mr. Sankey: Is that not a case of "covering?"

Witness: No; certainly not.

This concluded the evidence.

The Judge said he hoped this case would be a serious warning to Cardiff people not to employ these advertising unqualified practitioners. He knew of no more shocking case of maltreatment in this way of a poor, unfortunate woman, and he was only sorry he could not give judgment for a larger amount. He believed entirely the evidence of Dr. Mullin and Mr. Quinlan, and did not believe the man who had performed. He gave judgment for the full amount with costs, together with the costs on the application for adjournment.

UNSUCCESSFUL CLAIM AGAINST A BARNSELY DENTIST.

ARTHUR OGLESBY, chemist and druggist, of Barnsley, was sued by Thomas Hirst, miner, for £10 damages. Mr. E. J. F. Rideal, represented the plaintiff, and Mr. Banks, barrister, the defendants. Mr. Rideal stated the claim was for £10 damages sustained by the plaintiff when a tooth was extracted on the 28th January last. The doctor's bill amounted to £1 6s., 19 days' wages at 6s. a day—which was about the ordinary rate—amounted to £5 14s., leaving £3 claimed for the pain and suffering. The plaintiff, Thomas Hirst, was a miner, residing in Wood Street, Barnsley, and the defendant, Mr. Arthur Oglesby, was a chemist and druggist, and he also

described himself as a surgeon dentist. He had in his employ a gentleman of the name of McKenzie, who was a qualified surgeon dentist, and who attended to that branch of his profession. The plaintiff, Thomas Hirst, of No. 6 Court, 6, Wood Street, gave evidence in support of his case. When the tooth had been drawn, he felt the bone, and thought that McKenzie had not got all the tooth out. He looked in his mouth and said, "it is only a piece of jaw bone that is broken. It will go back to its place to-morrow." (Laughter). He asked him to take it out, but he said he daren't. He had a great deal of pain, and never slept for a week. On the Tuesday following he went to Oglesby's, and McKenzie told him he had got cold in it. He gave him some borax and told him to wash his mouth out with it. On the Wednesday following he saw Mr. Oglesby himself, and asked him to pay the doctor's bill. He said he should not, and plaintiff told him he should bring him to court for his wages and the doctor's bill. Dr. George Harper Pierce, of Darton, said that when he examined the plaintiff he found a portion of the alveolus protruding from where the tooth had been extracted, and he removed it: it was quite possible that it might be broken in the extraction of a tooth, that it might not be perceptible at the time, but might work outside the gum within 24 hours. For the defence, Alexander Ballantyne McKenzie, Licentiate of the College of Dentistry, Edinburgh, said that when the plaintiff came to have this tooth drawn his mouth was in an unhealthy condition. The jaw was stiff, the cheek swollen, and an abscess was forming at the root of the tooth extracted. Witness extracted the tooth, and at the time plaintiff expressed himself satisfied. He denied that Hirst said anything about the tooth not being all out—he took the tooth home with him—or that witness said that "it would go back to its place to-morrow." He could not see any part of the alveolus protruding then. It was quite possible for part of the alveolus to be dislocated. In such a case it would remain in the gum, causing some irritation, but it would probably work out of its own accord. Dr. Sadler also gave evidence supporting this, and His Honour gave judgment for the defendant.

Reviews.

CLINIQUE DE PROTHÈSE, by P. MARTINIER, Professeur de Prothèse à l'Ecole Dentaire de Paris, etc. Paris: J. B. Ballière et Fils.

THIS little volume is the fifth in a series of six publications, the whole series comprising "Le Manuel de Chirurgien Dentiste." It would be difficult to fix the exact English equivalent for the term *Clinique de Prothèse*, but broadly speaking it comprehends (to quote the author) all the operations relating to mechanical dentistry carried out at the chair side; it is the part of prosthesis performed in the presence of the patient. The volume is divided into two

parts : the first treating of matters relating to the fitting of artificial dentures, crowns and bridges ; the second dealing with (1) Irregularities of the teeth, their causes and treatment ; (2) The various splints used in fractures of the jaws ; (3) The various appliances employed for restoring the outline of the face after operations for excision of the jaw ; (4) Obturators for remedying cleft palate ; (5) and (6) Prothesis of the tongue and nose.

The chapters on the taking of impressions and bites, and the fitting in of plates are lucidly written and full of helpful and useful suggestions. We do not however agree with the author in all his teachings, as, for example, that amalgam is the *worst* possible filling for cervical cavities in teeth round which is placed a gold clasp. The contraindication being the fact that the contact of the two set up an electric current and so lead to the spread of caries.

Of all the branches of mechanical dentistry, the making of crowns and bridges is that over which a large proportion of operators spend most time at the chair side. In dealing with this subject, however, the author has but given a mere resumé of the different methods now in vogue. One looks in vain for practical advice in the overcoming of the thousand-and-one difficulties that such operations as fitting a collar round a root are surrounded, and much of the space given up to the history of obsolete methods and materials could have been more profitably employed in discussing various details relating to the fitting of crowns.

Perhaps the most interesting portion of the book is that dealing with immediate mechanical intervention for the prevention of deformity by the formation of scar tissue after excision of the jaw. The subject is most thoroughly explained and discussed. Much success seems to have attended the efforts of M. Martin, of Lyons, who has worked at the matter for many years, and the author evidently leans to the opinion that an appliance should be fitted immediately after an operation.

In spite of its 337 pages the book is of small bulk, taking up little room on the shelf, while the print is good and clear. The volume would be much improved by the addition of an index, which at present it lacks.

SMITH'S "DENTAL METALLURGY."

Mr. THOMAS FLETCHER writes to us :—"There are several parts of this useful book which need correcting and revising in the next

edition. The rolling mills, illustrated on page 68, are for rolling ingots, both unsafe and very unnecessarily hard to work ; they are designed only for the lightest jewellers' scrap work. The proper pattern for plate rolling has a four armed handle on one side and a ratchet handle on the other. With this the whole weight of the body can be used continuously without strain, and there is no risk of going head over heels when a wide plate jumps out at the end ; the central pillar support is too weak and unsteady, four legs are necessary.

"Purification of sweep, page 110. This can only be done economically on a large scale with special furnaces, and it is out of question in any ordinary workroom ; the purification of fillings, an important matter, is apparently overlooked ; and the process of boiling in nitric acid, and meltings, is so exceedingly simple and certain that it should find a place in the next edition.

"Bismuth amalgam, page 122. This metal, in a very small proportion, gives a most extraordinary smoothness and plasticity to all amalgams containing silver and tin, without injuring their properties in any way. Although mixed with a small proportion of mercury, to pack firmly under the instrument, so perfect is its adaptability that it can be packed against a flat surface of mother-of-pearl, and when hard the microscopic details of the surface which cause iridescence in the pearl are perfectly reproduced. Owing to this peculiarity it cannot be mixed or used in the hand, as it works into the pores of the skin, and cannot be removed without great difficulty.

"Gold amalgam, page 133. A formula for this is given under my name. No such alloy, and no alloy having properties in any way resembling this, has ever been made by me, except in private experimenting. It is probably an American piracy sold as mine, and its omission in future editions is desirable.

"Spheroiding of amalgams, page 139. This is stated to be 'probably due to a change of volume.' A few experiments will prove that this is not the case ; when there is a decided change of volume, as with precipitated silver amalgams, packing in tubes will show that there is no spheroiding ; the whole surface lifts, the edges rising above the level of the tube to practically the same extent as the centre. Where true spheroiding occurs, it will be found that as the centre rises the edges draw inwards, and the plug becomes leaky, the space is easily seen with a magnifying glass.

"Quantity of mercury needed. A 'true compound' is never formed, except by pure accident the analysis of any plug shows no approach to the atomic weights or proportions. The mercury should be used simply to give a cohesive skin to the grains, to enable them to weld together under pressure, and should never be sufficient to permit of change of form afterwards, amalgams containing silver and tin should be worked like cohesive gold if permanence is required.

"Preparation of alloys for amalgams, page 148. Instructions are given that the 'silver and platinum should be melted first.' This error, originated by some person who has a very insufficient knowledge of the affinities of the metals, has since been copied without question. Silver and platinum are difficult to combine, and still more difficult to keep uniform. On the contrary, platinum and tin combine chemically with the evolution of intense heat, at a comparatively low temperature, forming a definite crystalline alloy which combines easily with silver at a temperature below the melting point of the silver. In this manner the alloy can be made at a temperature not greatly exceeding the fusing point of the most fusible of the metals used, and overheating is entirely prevented. Want of knowledge on this point no doubt has caused the extraordinary statements as to the inertness of platinum in amalgams, it never got into proper combination, or was, probably, all in one end of one of the ingots.

"Purification of zinc, page 183. This metal becomes thick by repeated meltings, and the oxide held cannot be removed by ammonium chloride as stated. The only method which is at present known is to heat the metal to incipient redness, throw a small quantity of *strong* hydrochloric acid on the surface and stir with a stick. About two tablespoonfuls will render a large ladleful of thick zinc perfectly fluid, this, however, does not remove iron, which can only be separated by redistilling the zinc, which, of course, is impracticable on a small scale. In calling attention to these points, my only desire is to increase the value of a useful book, my own work on the same subject is in many points out of date, and as I have neither the time nor the desire to rewrite it, it is a pleasure to find that the matter has been taken up, and that English students will not need to go to America for their text-books on this subject."

THE DENTAL RECORD.

VOL. XVIII.

JULY 1st, 1898.

No. 7.

Original Communications.

THE DENTAL STATUS IN ITALY: PAST AND PRESENT.

By C. S. BRIGHT, L.D.S.Eng. (Genoa.)

Vice-President Italian Odontological Society.

ALTHOUGH a great improvement in the status of the profession has taken place during the last 10 and 15 years, yet much remains to be done before it can bear comparison with the position it holds in England or America, or even in Switzerland, Germany or France. For a long time past really competent Italian dental practitioners were very few and far between, and limited to a few of the principal cities, such as Rome, Florence, Milan, Genoa and Turin, any really good work being done almost exclusively by English and American practitioners, or by foreign dentists holding one of the British or American diplomas. The majority of native dentists were grossly ignorant of the fundamental and scientific principles of their profession, and, broadly speaking, were a mass of charlatans, the dentists ranking in social position with phlebotomists. I say broadly speaking, because, although a few Italian dentists took a pride in striving to act up to the standard and do honour to their profession, the exceptions, alas, were anything but numerous, and until the last few years the quack dentist, mounted on his ornamental car with his attendant brass band, was by no means a *rara avis*. In the year 1876, on the occasion of a Medical Congress held at Turin, an attempt was made by some of the educated dentists, both native and foreign, to take part in the congress and have their speciality recognised as a distinct and important branch of surgery; but this met with small encouragement from the medical profession, many of whom quite scouted the idea of considering a dentist as a

colleague, a state of feeling for which in the then existing state of dentistry there was an element of justification. The dentists then present formed themselves into a society under the title of the Italian Odontological Society, having for its principal object the improving and upholding of the status and dignity of the profession. A set of rules was drawn up, one of which provided that no one could be a member unless he held a diploma of some sort. The exhibition of show cases and unprofessional advertisements was strictly forbidden, as also the assumption of the title of doctor or professor (nearly all dentists so styling themselves) unless they could legally justify their right to such. The Italian law forbids the prefix of Dr. or Prof. to any who do not hold the university diploma of Dr., or who have the right to be called professor by occupying a chair in one of the universities.

The formation of this society was a decided step in advance, and although at first it included many undesirable members, they have since to a great extent been weeded out. The society has had several ups and downs, and at one time seriously threatened to die of apathy and inanition. A few earnest members however held firmly on, and stuck tenaciously to it, and the last three years new life has been infused and it bids fair to become firmly established.

Up to the end of the year 1888 a law existed by which no one was allowed to practise dentistry in Italy unless provided with a diploma, either national or foreign. As regards the latter, the holder of a foreign diploma was required to present it to the Office of Hygiene of the Municipality in the Commune where he resided. The Municipal Medical Officer's duty was to report on the diploma to the Provincial Medical Officer at the Prefecture, and he in turn to forward it to the Minister of the Interior, who would convalidate or reject it accordingly. This step was rendered necessary to guard against the bogus diplomas, which were unfortunately innumerable. In 1888 a new law was drafted, receiving the royal assent in November, 1889. This made it illegal for any one after that date to practise dentistry unless they were provided with a diploma of one of the Italian universities; any practitioner, however, who held a diploma of a *recognised* foreign university (Universita Estera di maggior fama) and who could produce proof of having gone through a proper course of study in his own country, was permitted to present himself for the special dental examination !!!

That this latter was little better than a farce at several of the Italian universities, a few of the questions submitted to candidates are here shown :—

1. How many milk teeth ought a child to have ?
2. How many permanent teeth should the adult possess ?
3. How do you proceed to scale teeth ? Do you draw the scaler upwards or do you thrust it downwards ?
4. What would you do in a case of inflamed gums ? The candidate replied, Try and find out the cause and treat accordingly. For this answer the candidate scored well.
5. What would you do in the case of a dead pulp. The candidate replied, Remove it.

Question pursued—But how about the root ? Candidate replied, Remove it with proper drills (Gates Glidden).

The professor!! declared this not possible, and upon the candidate insisting that his principal had drills especially adapted for that purpose, the professor still stuck to his colours, asserting that it was not possible.

These examples might be multiplied, but are quite enough to demonstrate the value of the Italian dental diploma and the facility for obtaining the same at *some* of the Italian universities. Not all were however so utterly disregardless of their dignity, but as a dental diploma obtained from *any* Italian university conferred the legal right of practice throughout the kingdom, these examples are given merely to show with what facility a diploma *could* be obtained, and in fact, with one or two universities it was practically only a question of paying fees and the diploma could be obtained by the most ignorant.

A gentleman of my acquaintance, whose only qualification as a dentist was his position and the knowledge obtained as a representative of one of our leading dental depots some 10 years ago, undertook for a wager to present himself for examination and obtain the dental diploma. He did so, and became legally qualified to practise dentistry in Italy.

This state of affairs has now however come to an end. On account of a special and scandalous case having come to the notice of the Italian Odontological Society in the year 1891, our present president, who was then secretary, proceeded to Rome and obtained an interview with the Minister of Public Instruction, who immediately

ordered the suspension of all dental examinations throughout the kingdom. A decree was signed in April, 1891, enacting that from that date no one could legally practise dental surgery unless he held the full diploma of medicine and surgery granted by an Italian university; so as the law now stands no foreign dentist domiciled in Italy since April, 1891, can legally practise dental surgery unless provided with the *Italian* diploma of medicine and surgery, and is liable to a fine of 100 lire and upwards for each offence. A curious anomaly exists on this point. A foreign medical man may, if properly qualified in his own country, attend to his own country people without the necessity of holding the Italian diploma, but the dental surgeon is expressly forbidden attending to his own or any nationality whatever.

This law of 1891 has really gone far beyond the mark, for although it is infinitely preferable to the miserable farce of the so-called dental diploma, yet it has made no provision whatever for any course of dental instruction. The curriculum of six years required by the Italian universities for obtaining the degree of doctor of medicine and surgery can compare favourably with that of any country, and Italian medical men are justly worthy to rank with any of their foreign confrères, but unfortunately no special course of study exists for the dental surgeon. It is true that at some of the universities there is an *optional* course of lectures on dental *surgery* and *anatomy*, but there is not a single university or hospital in the kingdom where a student can obtain the necessary instruction and practice in operative dentistry, nor is there any provision for mechanical work. Any student wishing to qualify himself in the art of stopping or treating the different defects and lesions of the oral cavity must acquire his knowledge at the hands of some private practitioner. This is a very serious defect, and one which at present does not seem to have any promise of remedy on part of the government. The council of the Odontological Society are studying to devise some scheme to supply this want without calling upon the government to make any pecuniary grant, the demanding of which at the present moment would be fatal. Several years back some of the Florentine dentists, foreign and native, established at their own expense a dental dispensary where students had the opportunity of obtaining practical instruction, but this has never obtained any legal recognition.

There is a dental dispensary attached to the principal hospital at Milan and at Turin. At the hospital of San Andrea, at Genoa, in the dispensary or ambulance teeth are stopped, different oral lesions are treated, and medicines furnished all gratuitously, but with these exceptions I believe the other hospitals limit themselves to simple extractions and advice. In Genoa, also, there are two polyclinics, including a dental department, and also in some few other cities, the work being limited to extractions and advice. Not any of these, however, confer any legal status. There is still the hope that the Odontological Society may obtain something in this direction.

To return to the status of the dentist. Many who have proved themselves to be men of education and science are now recognised as worthy colleagues by their medical confrères, and the Italian Odontological Society has accomplished much in creating an esprit de corps, and bringing about a friendly feeling between its different members, some of whom do turn out work that would do credit to any English or American dentist, but these have almost all had to complete their studies and acquire practice away from Italy, either in America, England, France, Germany or Switzerland, where the schools and institutions for such purpose do exist, but which for the present moment in Italy is an Utopian dream. During the last decade the relations between the dentist and the public have vastly improved, and the dental surgeon is now considered as something more than a (Cava Dente) tooth drawer; he is recognised as a man of education and science, and his work in many cases appreciated at its just value and his speciality as a necessary branch of surgical art. The number of Italian dentists who do honour to their profession is increasing, several cities possessing such, and although there is great room for progress and very much remains to be done, yet there is a very vast difference between the status of to-day and that of even 10 or 15 years back.

BRITISH DENTAL ASSOCIATION.

ANNUAL GENERAL MEETING, 1898.

THE Annual General Meeting of the Association was held in the Assembly Rooms, Bath, on Saturday, May 28th, Sir EDWIN SAUNDERS, in the enforced absence of Dr. Stack, from illness, occupying the chair.

The CHAIRMAN in opening the meeting said it was a surprise to him to find himself there, but an agreeable surprise, as it gave him an opportunity once more of meeting old friends, and those young and vigorous new recruits who constituted the hope of the Association and the future of the profession. Life was made up of alterations, of pleasure and pain, of sunshine and shadow. Who would have believed, six months ago, that their friend the President, Dr. Stack, so full of enthusiasm, in middle life, in the plenitude of his intellectual powers—whose hopefulness and helpfulness had enabled him so successfully to overcome the natural disadvantage of loss of hearing—would be prostrated by a paralytic seizure and rendered incapable of moving, or even of dictating, his valedictory address? That was a shadow on their sunshine, for with the friendly greetings and gaiety of heart to which those gatherings naturally gave rise, there was the dark shadow of the affliction which had fallen upon Dr. Stack, and which deprived the meeting of his genial and stimulating presence. Under those circumstances it seemed good to the organizing body who had charge of the arrangements of the meeting, to call upon the Senior Vice-President to preside. He had no doubt that the feeling of the meeting was one of intense and deep sympathy with Dr. Stack, and he thought he should not misinterpret the general wish of the members in proposing that a message should be dispatched to Dublin to the following effect:—"That the members of the British Dental Association now assembled at Bath for their Annual Meeting, desire to give expression to their heartfelt sympathy with Dr. Stack, and in doing so they would indulge the hope that a further term of rest may enable him to be restored to his family, and to resume the duties and pursuits of active professional life."

Mr. J. SMITH TURNER seconded the resolution, which was carried unanimously.

The CHAIRMAN then delivered a short address, chiefly composed of recollections connected with his professional life.

On the motion of Mr. S. J. HUTCHINSON, seconded by Mr. P. T. BROWNE-MASON, a hearty vote of thanks was accorded to Sir Edwin Saunders for coming down to Bath, and a word of thanks was added to Lady Saunders for honouring the gathering by her presence.

The CHAIRMAN, in reply, said he had very pleasant recollections of meetings of the British Dental Association, especially of three,

which would always dwell in his memory. The first was the noble reception they had in the beautiful city of Edinburgh ; then the warm and hospitable reception at Norwich ; and again amongst the classic halls and colleges of Cambridge. There would now be a fourth, the fair city of the west. The profession were now, for the first time, in possession of a representative on the General Medical Council, and he looked upon it, and thought they must all look upon it, as the crown and consummation of their wishes and aspirations for the advancement of the profession—a consummation which they had all laboured incessantly for in their various spheres of influence. They had only to hope that their excellent delegate might have health and happiness for many years to look after their interests on the General Medical Council, and to enjoy his own happy life and the distinction which the Queen had conferred upon him. It only now remained for him, the chairman, to introduce to the members, although it was scarcely necessary, the President for the ensuing year, Mr. W. A. Hunt. He was no stranger to them, for his father was an old and highly esteemed member of the profession, who had always felt a keen interest in the work, and who, they were glad to know, though advanced in years, was able still to enjoy the amenities of social life. It would not be necessary for him to bespeak for the President a cordial reception at their hands, for with those credentials, and his own innate energies and abilities, they might rest assured that the traditions and the prestige of the British Dental Association would be amply maintained during his year of office.

Sir Edwin Saunders then vacated the chair, which was taken, amidst cheers, by Mr. W. A. HUNT, of Yeovil, the President for the ensuing year, who proceeded to deliver the following Presidential Address :—Gentlemen,—Some men achieve greatness, some are born to greatness, and some have greatness thrust upon them ; of this last class I am an example, and while I acknowledge with gratitude the honour you confer upon me by making me your President, I confess the wish that I were more worthy of the position.

As President of the Western Counties Branch, on their behalf, I give you one and all a most cordial welcome to this beautiful city, our “Queen of the West,” and we trust you will all have an interesting, instructive and enjoyable meeting, that may repay you for the journey—and some of you have had long ones from your distant homes in Great Britain and Ireland.

After referring to the many interesting associations with Bath, the President said,—“We hear about the ‘Parent’ Society, but in the West, in spite of Dr. Johnson, we are accustomed to believe that a child is younger than its parent. We, being fully born so long before the British Dental Association, can safely regard it as a very dear but younger brother, rather than our ‘parent.’ We are now a branch of the Association, but, please remember, the branch in this case preceded the trunk !

“Each succeeding year makes the selection of a subject for a Presidential Address more difficult. My intention is briefly to touch upon some points of general interest at the present moment or in the near future, and I will leave the Treasurer and Secretary to deal with the machinery of the Association, the number of its members, the work they have done, and, in fact, with its temporal prosperity.

“A question is sometimes asked whether a Licentiate in Dental Surgery can legally administer an anæsthetic? Well, if ‘History is Philosophy teaching by example,’ what light will the past throw on the present? Nitrous oxide, discovered by Priestley, a Congregational minister, in 1772, was studied by Sir Humphrey Davy, of Penzance, at the Pneumatic Institute at Clifton, and in 1799, after careful experiments on the lower animals, he stated, ‘that as the gas appeared capable of destroying physical pain, it would probably be used with advantage during surgical operations in which no great effusion of blood takes place’—a Western Counties man, gentlemen. I need only draw your attention to the fact that it was Horace Wells, of Hartford, Connecticut, who conceived and carried out successfully the experiment, in his own person, of having the pain of the extraction of a tooth annulled by nitrous oxide inhalation, December 11th, 1844, Mr. Colton giving gas and Mr. Riggs operating. Now Horace Wells was a dentist *only*, and at once used gas, and that successfully, among his own patients. He knew nothing of Davy’s suggestion, and it was fitting that the head which gave birth to so great a thought should itself furnish the first practical proof of its importance. He then carried the use of nitrous oxide into general surgery; and many and large were the surgical operations performed painlessly under its action. Then comes Morton—his former pupil, and afterwards partner—on the scene, who a year and nine months after used, at the suggestion of Jackson, the chemist, ether so as to produce intoxication, which

was found to annul pain during the extraction of a tooth, Then we have operations under ether, October 16th, 1846, in the Massachusetts Hospital. November 28th, 1846, Dr. Bigelow of that hospital writes to his friend, Dr. Boott, in London, from Boston, an account of ether inhalation and of its great success in surgical operations; he confers with Mr. Robinson, the senior partner of Mr. Underwood, of Gower Street—the dentist—and at Dr. Boott's house in Gower Street, Mr. Robinson, having himself designed and made the first apparatus in this country for the purpose, administers ether to a Miss Lonsdale and extracts a firm molar painlessly for her, December 19th, 1846. This, then, was the first painless operation of this kind in this country, and was followed by the amputation of a thigh two days afterwards, by Liston, at University College Hospital, December 21st, 1846.

“Meanwhile Mr. Robinson had written to my father—his personal friend—a full account. The letter arriving at Yeovil in the evening, my father got up next morning before breakfast and walked three miles in the snow to a mechanic he knew of, and got an inhaler made, and at once set to work, and I believe was the first man out of London to adopt and make use of ether. And many were his early difficulties with it. Mr. Robinson in London is an enthusiast; he goes round to King's College Hospital, the Westminster, Guy's, the London, St. George's, St. Bartholomew's, St. Thomas's the Middlesex, &c., and *personally* administers ether for all the great surgeons, and absolutely demonstrates to them the birth of a real plan for relieving the awful and horrible pains that poor suffering humanity had to undergo in those days. I have here an extremely interesting treatise by Mr. Robinson on ‘The Inhalation of the Vapour of Ether for the Prevention of Pain in Surgical Operations,’ sent by him to my father, and published in 1847, from which, did time permit, I could not only interest you, but instruct you, and which contains a diagram of an ether inhaler, the principal of which, in my opinion, is greatly superior to that of most methods of giving ether to-day.

“Then comes another invention, the blessed word ‘anæsthesia,’ a term also from the West, and coined by the genial ‘Autocrat of the Breakfast Table’—Dr. Oliver Wendell Holmes. I need hardly remind you that the renaissance of nitrous oxide in Europe was brought about by the late Dr. Evans, the dentist, of Paris, who

brought at his own expense Mr. Colton over with him from Paris to London in 1868, with a record of 25,000 cases in America and some in Paris without a death ; the same Mr. Colton who gave gas to Dr. Wells, as I have before related, and be it remembered that Dr. Evans offered £100 to the Dental Hospital of London to be used for the purchase of apparatus for making and using the gas. In March, 1868, Dr. Evans publicly demonstrated the action of the gas before the leading dentists in London ; such names as Hepburn, Underwood, Coleman, C. J. Fox, Saunders, Parkinson, Mummery, Tomes, Sercombe, Vaisey, Walker, Woodhouse, occur to me, and very many others. Mr. Clover also gave his assistance. Then, the value of gas being established, the leading physicians and surgeons were invited to witness these operations. I myself gave gas for Sir W. Gull, Sir W. Jenner and others to see, and in November, 1868, I had erected a fifty-gallon gasometer in my own little native town in the West (and was, I believe, first in the field in the West), and had to instruct my medical confrères how to use nitrous oxide and exhibited to them its wondrous properties.

“ In 1885 I began to experiment with cocaine, and wrote, I believe, the first paper in England for dentists on its action and the method of using it, and early brought it under the notice of my medical confrères and first used it in general surgery in my town.

“ Thus history points with no uncertain finger to dentists as the originators of anæsthesia—and, more than this, they have ever pressed it upon the medical profession, and that too in spite of opposition from medical men. Hear the words from a great authority on anæsthetics, the late Sir Benjamin Ward Richardson. Listen to what he said to me in 1868, on April 13, at a meeting of the Medical Society of London—he, as President, was in the chair. I drew attention to the use of nitrous oxide as an anæsthetic which had been urged upon the profession. ‘ He considered that nitrous oxide was no true anæsthetic, but an asphyxiating agent. It could not be other than a dangerous agent, and its employment was a retrogression in science ; he pronounced the gas to be the most dangerous of all substances that had been applied for the production of general anæsthesia.’ Gentlemen, with these matters of history to guide us, are we to be told that the production of anæsthesia is not within the ability of a duly qualified dentist? The very

suggestion to my mind is preposterous. But on the other hand, the safety, the life of the patient is in the hands of the anæsthetist, and he should be carefully taught his responsible duty, and should satisfy his examiners when seeking his diploma that he *has* the needful knowledge. Neither in the medical profession nor in our own is this done—and I consider it high time steps were taken to alter this state of things. Much has to be learned by everyone before he should attempt to produce anæsthesia. Much is unknown, and there is conflict of opinion; but what is known should be known by everyone who intends to produce anæsthesia. I need not say here that two practitioners should always be present; that, I hope, is admitted by all.

“I have witnessed death under methylene and under ether, but fortunately not under nitrous oxide, although I have witnessed a very, very anxious case. In the methylene case I was the one to stop the administrator, as I had my finger on the pulse and found it cease, although respiration was going on. I made a post-mortem and found, as you will generally see reported in these sad cases, that the heart, to all naked eye appearances, was perfectly healthy. This is very remarkable, and shows we have much yet to learn about these matters.”

After referring to the work of Sir John Tomes, Sir Edwin Saunders, and Mr. Smith-Turner—

The PRESIDENT continued: “Numbers of incompetent men whose names should never have been upon the Register are dropping away, and good men that we can be proud of are taking their places. Time will purge completely our Register, and fill it with men of a worthier calibre. The new Dental Register has just appeared for 1898, it contains 4,937 names, of which 1,672, or more than one-third, hold diplomas approved by the Medical Council, the rest being *sine diploma*. This is a striking improvement, and confirms my statement.

“But some ardent reformers will say ‘Oh! we have waited long enough, quackery, like Tennyson’s “Brook,” goes on for ever.’ True, we have well educated men in our ranks, but we are overshadowed by lying advertisements, and by various kinds of low trickery, which make us at times ashamed of our profession, and if the Dental Act is not competent to put this down let us agitate at once and get the Act amended.

"But, gentlemen, with regard to such haste, hear what Herbert Spencer says, who, in denouncing immature, ill-considered and ill-advised legislation, says that no prophecy is more safe than that the results anticipated by such legislation will be vastly exceeded in amount by the results never anticipated. Medical men likewise bewail the weakness of their Medical Act; and a movement is visible among the dry bones in the Medical Council valley. A strong man has lately been added to their body—Mr. Victor Horsley—and a firm friend of our profession, and he questions whether they properly interpret the Medical Act, and this in brief is his argument: A registered medical practitioner is entitled by law to practise medicine, &c., and common sense would at once suggest that an unregistered medical man was not, by law, entitled to practise medicine, &c.

"Such an inference he draws, new it may be, but true it is hoped to be; and at the last session of the Medical Council it was determined that this point should be proved by instituting proceedings, so that a case might be brought before the courts and a decision taken from the mouth of a judge. Surely this is but right and just. A man who can bring evidence to the Medical Council that he is fitted for registration is placed upon the Register and can legally practise his profession; while a man who cannot do this should clearly not be allowed to practise; punishment should follow a man who attempts to tamper with the human body who is too ignorant to be placed on the Register. In other countries than Great Britain and Ireland such is the law, and why not in our densely populated country? Can you tell me, can you give me a single valid reason why? I doubt if you can. Look at the sister profession of the law; even an admitted solicitor, unless he has taken out his certificate, cannot practise law upon clients without exposing himself to punishment. The lawyers can take care of themselves; shall we confess ourselves unable to do likewise? Now, then, if the Medical Council carry out this matter as I have briefly laid before you, it would be but a short step to read this interpretation into our Dental Act, which in some points indeed is more stringent than the Medical Act. And here any haste would be disastrous. Could all these suggestions become active practical law to-morrow, have we, as I already quoted from Sir John Tames, have we in our ranks sufficient educated men for the public needs? I do not believe we

have, and Parliament is very slow in any restrictive legislation unless they are convinced of its value for all; therefore let us be patient and wary. Time may seem to move with leaden feet, but it does move, and I firmly believe is slowly but with certainty ameliorating our position. One thing we may do—we may arouse the interest of good men who as yet have not joined this great Association. Years ago I tried to get a friend to join, and his reply showed a singular want of knowledge that made a great impression upon me, and I have never forgotten that answer, and I fear there are some to-day who would give me an answer like my friend. He said, 'Yes, a guinea a year, but what shall I get out of it?' I said, 'Your object in joining should not be what you can get out of it, but what you can get into it; what help you can give, in work, time and money to further the interests of the profession of which you are a member, and by which you earn your daily bread.' But, of course, if a man is insensible to such a line of argument and if in any way he might be made a useful member, you must attack the selfish side of his character. You will find him as a rule very ignorant of the aims of our Association, and ignorant of what good work has been done by it; and generally he will be found clamorous for instant and drastic legislation. Gentlemen, if knowledge is power, the converse is equally true. Ignorance is weakness. Let ours be the pleasure and the duty to dispel all such ignorance as we may come personally into contact with, and thus we shall increase in numbers and in power, and in usefulness to the public.

"Let us strain every nerve, not only to advance each branch of the profession we have chosen, but also to advance our own individual culture as much as we can; and only thus shall we enjoy the greatest pleasure which honourable and upright men can conceive—that of increasing the usefulness, and thereby raising the credit and respectability of the body to which we belong, so that in after years, if life be spared, we may look back on the past with the satisfactory reflection that we have done what we could for our fellow men.

"By this standard must be likewise measured what we have done for our profession. We exist for the public good, and the more we personally advanced that good, the more we have uplifted our chosen profession."

On the motion of Mr. W. BOWMAN MACLEOD, seconded by Mr. ANDREWS, a hearty vote of thanks was accorded to the President for his address.

The HON. TREASURER (Mr. W. Hern) read his report, which stated that the Reserve Fund now amounted to £1,000. The amount of income over expenditure for the year was £245 16s. 5d. (about £219 more than last year), and of this surplus £165 belonged to the General Account and £89 15s. to the Journal Account.

The report was adopted.

The HON. SECRETARY (Mr. W. B. Paterson), also read his report, which stated that during the eight months which had elapsed since the previous meeting no legal proceedings had been undertaken, the reason being that the inquiry forms sent in to the Association had been very few, and had all been dealt with without appeal to the law, and secondly, that there were cases pending on the part of the General Medical Council and also on the part of the Medical Defence Union which might put a different complexion upon certain portions of the Act according to the decisions arrived at. With regard to the proposal to amend the Dentists Act, briefly referred to in the last report, the sub-committee appointed to draft certain alterations by way of amendment had, by reason of the pending law cases, lapsed into a state of suspended activity. The contention of Mr. Victor Horsley that the Legislature in conferring upon dentists the privilege of practising the profession of dentistry, intended it to apply only to persons qualified under the Dentists Act and no others, was, no doubt, worthy of consideration, but the certainty of common sense was very often quite equal to the uncertainty of the law. The report then referred to the nomination of Mr. C. S. Tomes to a seat on the General Medical Council, and stated that never since the passing of the Dentists Act had there been such a complete recognition of the claims of the profession, and such a marked advance in its status. The report also mentioned the formation of a Welsh branch of the Association under the title of the South Wales and Monmouthshire Branch.

Mr. BROWNE-MASON proposed the adoption of the report, and Mr. REDMAN seconded.

Mr. J. F. COLVER said before the motion was put to the meeting he should like to ask a question with regard to the paragraph dealing with the Medical Council and certain individuals placed on

the Dentists' Register, namely, whether the executive had received from Mr. Cunningham any explanation of the testimonial given by him to Mr. Royce and used by the latter gentleman in support of his application to the General Medical Council to be registered as a dentist?

The HON. SECRETARY said the matter had been before the representative board, and read the following minute of that Board:—"Mr. Cunningham made a personal explanation with regard to Mr. W. E. Royce's application to be placed on the Dentists' Register (which application was before the meeting of the Medical Council in November last). He said that the testimonial used on the occasion and signed by him (Mr. Cunningham) was written for Mr. Royce a long while ago, and simply referred to his ability as a dental operator. He (Mr. Cunningham) knew that this testimonial letter had been used to further the claim of Mr. Royce to be registered on a previous occasion when the Medical Council was appealed to, but unsuccessfully. Mr. Royce used it on the second occasion, namely, in November last, without consulting Mr. Cunningham." The board, said Mr. Paterson, having heard the explanation, passed on to the next business.

Mr. COLYER said he should like to know whether, after Mr. Royce used the testimonial in favour of his candidature to the General Medical Council, Mr. Cunningham took any steps to prevent it being used again, and if Mr. Cunningham knew that Mr. Royce's application was coming before the General Medical Council in November? If so, did he inform the representative board of the fact?

Mr. GEORGE CUNNINGHAM considered that he should have had notice of any questions which were going to be asked, but ultimately, after some discussion, agreed to answer any questions which were put to him seriatim.

Replying to Mr. Colyer he said the matter was one which covered a number of years. When it first began, and he gave the first letter, he was on the Business Committee, and he assured the members that he then advanced the question of the candidature of Mr. Royce, and his position on the General Medical Council was before the committee. As far as the testimonial was concerned, it was one which was given a long time ago. It was written to, and was Mr. Royce's property, and he was free to use it whether he

(Mr. Cunningham) liked it or not. He knew Mr. Royce, who was a gentleman, and would make no unfair use of the testimonial. He had told Mr. Royce : " If I were on the Medical Council I should not place you on the Register ; but I would try to make you a channel, or avenue, by which you could be examined and prove that you are an intelligent and capable person, and would do credit to the profession of dentistry in this country." He was perfectly ready to give place and date and the whole history of the matter, but if the questions were to come up again, he asked that he might be given proper notice of them.

Mr. COLYER asked if Mr. Cunningham would be willing to lay the papers referring to the matter before the Business Committee ; if Mr. Cunningham were in the right the committee would be the first to admit it.

Mr. CUNNINGHAM said he would do so, and he should make a point of putting in every letter in connection with the matter.

The PRESIDENT said that that course would meet with the approval of the members.

The Report of the Hon. Secretary was then put and adopted.

ANNUAL MEETING 1899.

The PRESIDENT said the Association had received a very kind invitation from the Eastern Counties Branch to go to Norwich next year, and Whitsuntide had been selected as the most convenient time. Mr. Richard Wentworth White had been suggested by the Representative Board as the President, and he believed Mr. White would consent to accept the office if he were asked to do so.

On the motion of Mr. Rees-Price, seconded by Mr. BRUNTON, it was resolved that the invitation of the Eastern Counties Branch to meet at Norwich should be accepted, and that Mr. R. Wentworth White should be the President.

ELECTION TO THE REPRESENTATIVE BOARD.

The following nominations were received :—Messrs. C. S. Tomes, W. H. Woodruff, S. Spokes, F. Harrison, C. Rees-Price, J. S. Amoores, F. Canton, J. T. Browne-Mason, E. G. Belts and J. Fenn Cole.

On the motion of the PRESIDENT, seconded by Dr. WALKER, the nominations were accepted, with the exception of the name of Mr.

C. S. Tomes, that gentleman having been placed upon the General Medical Council, resigning all official connection with the Association.

The first paper read was by Mr. J. G. Turner, F.R.C.S., on "Dental Cysts." Two theories, he said, were held as to the origin of dental cysts, which might be referred to as the epithelial, or epiblastic inflammatory theory, and the connective tissue, or mesoblastic inflammatory theory, and cases were held to occur supporting them both. The starting point of both theories was septic inflammation, which, in the first theory, started into active growth epithelial remnants, eventuating in a cyst; on the second theory mesoblastic or connective tissue elements were started into activity, and by their growth formed an actively expanding cyst. To try to throw some light on the occurrence and relative frequency of those two processes, he had, during the last two years, carefully examined and recorded all cases coming under observation, and with the generous co-operation of his colleagues on the staff of the Dental Hospital had been able to collect notes of twenty-five cysts, and the results, both pathological and clinical, he dealt with in his paper. The results of pathological examinations of cyst walls were very greatly in favour of the epithelial lining. He had seen one case showing positive evidence of the occurrence of dental cysts of mesoblastic origin, so that though there was no inherent possibility in the theory, he was inclined to doubt its accuracy; but he had specimens illustrating the succession of changes occurring in the development of epithelial cysts as well as the fact of epithelium demonstrated in 16 dental cysts out of 17 examined. With the aid of lantern slides of micro-photographs of sections Mr. Turner traced the formation of an epithelial dental cysts. With regard to the chief clinical features of a dental cyst, it was a smooth, non-lobulated, generally painless, progressively growing tumour, hard and tense, crackling or fluctuating to the feel, or both, occurring in the jaw, and always originally caused by a bad tooth, though the tooth might have been extracted, containing a viscid translucent fluid with crystals of cholestrin in suspension. The history was always one of septic absorption from the tooth—pain and swelling, followed, perhaps, by gumboils or a persistent sinus, another, the appearance of a tumour—or where the septic effect were very minute no pain was noticed and no inconvenience followed till the tumour became

large. Such a cyst, putting aside solid tumours, had to be diagnosed from in its early stage, solid tumours, chronic abscesses, chronic emphysema antri, cystic disease of the antrum, dentigerous cyst, and gingival cyst. With regard to treatment, the best way of getting rid of the trouble was to excise its outer wall and scrape away or cauterise with pure carbolic the rest of it. The cavity might be firmly packed at first to check bleeding, and lightly plugged after to induce healing from the bottom. The tooth itself might be saved when the cyst was small, and rendered serviceable by ordinary antiseptic treatment. Free excision of the outer wall hastened recovery. Where the antrum was opened he kept a roll of iodoform gauze, lightly plugging the opening to exclude food, and by frequent syringing kept the antrum clean till the opening healed, and all his cases had, so far, done well.

Replying to a discussion, in which Mr. Storer Bennett, Mr. Gaddes, Mr. Dolamore and Mr. F. J. Bennett took part, Mr. Turner said he always used formalin in connection with his specimens because he found he got a better result at the time; but he was afraid the stains were liable to disappear within a year or so. Celloidin was difficult to use, but the results, he thought, were worth it. With regard to a retrograde metamorphosis of an alveolar abscess ever producing growth, he thought it was unlikely, because, if it retrograded, it remained *in statu quo*, and did not increase to a fresh size. In his opinion the irritation set up by the absorption in a dead tooth in all probability started the whole process.

The next paper was read by Mr. J. T. BROWNE-MASON on "A Plea for More Art in Artificial Teeth." He thought the routine of the workroom was unfair to have cases left to an assistant who did everything by "rule-of-thumb," and the assistant, in most cases, not having seen the patient; and much less would he see the effect of his work when placed in the mouth. The impression taken was handed over to him by the dental surgeon, and no more notice was taken of it afterwards until it was inserted in the mouth. If that were not so, how were the monstrosities which were come across from time to time accounted for? Very many failures, he thought, in the application of artificial teeth, were caused by the dentist thinking more of rendering the work as easy for himself as possible, and not sufficiently studying in what way he could realize and

restore the face to its original lines, after allowing for alteration caused by age. It was necessary to form in the mind's eye an ideal restoration of the face before the work was begun, and then every endeavour should be made to realize it. In edentulous cases he had found the greatest help in obtaining a photograph or other portrait of the patient before the loss of the teeth, and making his work reproduce the expression there portrayed. Frequent reference to the mouth at different stages of the work was necessary to see the effect, for the dental surgeon could no more do without that than the artist or sculptor could produce a satisfactory likeness from one or two sittings. When the lower jaw was set up satisfactorily, the all-important "bite" must be taken to permanently settle the length of the face.

A paper was also read by Mr. SMITH TURNER on "Matters Connected with the British Dental Association, Registration, Membership of the Association, and Multiplication of Branches."

With regard to registration, he said that its value was sometimes questioned, but it was in fact one of the most elementary and yet most all-pervading conditions of organisation. There could be no corporate body without it. A man might assume a certain title by virtue of his diploma, but his real claim to it was proved by registration. It was the final condition of legal qualification, and unless it were fulfilled the legal status of a dentist was incomplete and insecure. A person registered was a declared member of the profession of dentistry, and when on the Dentists' Register, but not till then, the individual might legally and honestly call himself a dentist. "It is a common error," he said, "to suppose that registration in itself can do much for the profession. I was told a short time ago by a medical man that registration is of little value—indeed, he considered it hardly worth the trouble and expense involved. By way of supporting his position he cited certain grievances about illegal practitioners and advertising quacks, and quack medicines and foreign qualifications, and seemed to think that the existence of a register should stop all such evils. My reply was that in the absence of registration there would be no legal difference between him and the quack of whom he complained, and that the public who cared to make the distinction could only do so by referring to a legally established register. Further, that the quack could have any number of bogus diplomas, and exhibit far grander and more

imposing documents than anything he could produce in the shape of his legitimate diplomas ; and that without registration one would be as valuable as the other in the eyes of the ignorant and credulous. Again, we may rest assured that all abuses which have to be attacked must be either assulted or met from some vantage ground or stable position, such as the register alone affords ; and that whatever legal reforms may in the course of time be effected could only be done by the profession being a distinct body held in evidence by registration. I need only add that the same applies to ourselves." With regard to the British Dental Association, Mr. Turner said that it had on its roll of members all that was best and all that was noteworthy, but as regards ability and education, in the dental profession on both sides of the Tweed and in the sister island. He urged the younger dentists to join the British Dental Association, which linked together the scattered members of the dental profession and afforded a means of communication between the dental profession and the public. The charlatan communicated with his special public by means of his brass bands and his gilded chariots, and by advertisements, at one time flaming and brilliant in impossible promises and at another modest and persuasive in whispered advantages, but always characterised by unscrupulous mendacity. The association, in a measure, counteracted these methods by its annual and branch meetings, and the public learnt—and, it might be, soon forgot, but yet it did learn—through the unpurchased medium of the Press that there were gentlemen who served them in a scientific manner and on a professional basis, which was as far apart as the poles in every way from the methods of those who lived by cheating, and therefore cheated to live. After pointing out the advantages of intercommunication, he concluded by a plea for the multiplication of Branches.

Mr. GEORGE CUNNINGHAM read the Report of the Schools Committee, which was adopted, and the whole of the reports throughout by the committee it was agreed should be reprinted. The question of the formation of a section of the Association with regard to the collective investigation as to the condition of the teeth of school children was referred to the Business Committee for consideration.

At the afternoon meeting, on Monday, Mr. Colyer read a short paper, and exhibited a series of slides having reference to the "Treatment of Crowded Mouths."

Mr. Cunningham also read "Some Further Notes upon the Immediate Regulation of Teeth," in which he explained, by means of a series of lantern slides, his method of operation, and exhibited photographs showing the results in several of his cases.

A short paper on a new form of Strengtheners was read by Mr. S. A. Coxon. In his opinion, strengtheners, to be of any use, should have sufficient power to hold the case together during the process of mastication, and be made in such a way as not to interfere with the strength of the vulcanite itself more than could possibly be helped, and at the same time add as little as possible to the weight of the case. After carefully studying the broken dentures that had come to his notice, he had come to the conclusion that unevenness in the thickness of the plate itself had been a more fruitful source of breakage than any other, that all fractures occurred from the labial side, and that very vulnerable places were to be found round the necks of isolated teeth. He had also found that plates when made too thick became so rigid that they would more easily break than a thinner plate. Vulcanite cooked between metal plates would stand a greater breaking strain than if it was cooked between plaster. He considered the best position for a strengthener was on the top of the ridge, or as near as possible as the artificial teeth would allow, as that was the place at which the greatest strain occurred. It should be of a nature that it could easily be inserted after the pink rubber had been packed, and sufficiently light not to add materially to the weight. After describing the old form of strengtheners, Mr. Coxon exhibited a strengthener he had made which was of a section like the letter T, somewhat similar to section universally employed by engineers for struts and girders. It was not so easily made as a wire strengthener, but was five times as strong as one of the same weight. It also had the advantage of being perforated, and in that way became part and parcel of the vulcanite. One of the advantages he claimed for the strengthener was that the vertical portion could be bent in and out to accommodate any irregularity of the tooth before soldering without impairing its strength. He also exhibited another form of strengthener made in the shape of a V.

The Adjourned General Meeting was held on Tuesday afternoon, when the following telegram was read from Dr. Stack, "Please convey to the president and members of British Dental Association sincere thanks for telegram expressing sympathy."

A paper was read by Mr. DAVID HEADRIDGE on "Dental Education and Medical Qualifications."

VOTES OF THANKS.

On the motion of Mr. BROWNE-MASON, seconded Mr. BREWARD NEALE, the thanks of the Association were given to the Mayor and Corporation of Bath for their kindness ; Canon Quirk, Major Davis, the City Architect, for his excellent octave on "The Roman Baths" ; Dr. Carter, for showing the members the Mineral Water Hospital ; Mr. and Mrs. Dudley for their very great kindness and hospitality ; Mr. McDonald, Mr. Royal, the readers of papers ; the Arrangements Committee ; Mr. Hopewell Smith, the Hon. Secretary of the Microscopical Section, and to Mr. F. M. Farmer, Mr. F. S. Rose and Mr. Sidney Spokes for their work in connection with the School Committee.

The meeting then closed.

MICROSCOPICAL SECTION.

The meeting of the Microscopical Section was held on Monday, May 30th, the PRESIDENT of the section (Mr. F. J. Bennett), occupying the chair. In his Presidential Address Mr. Bennett dealt with the subject of dental caries. It could scarcely be doubted, he said, that the best representatives of the profession did their work of mending caries well and worthily, and had brought the art to a high stage of perfection ; yet, notwithstanding, it could as little be questioned that the disease of caries was becoming year by year more widespread, more rapid and more complex. The progress of caries was nowhere more evident than in temporary teeth, and it was at an early age that the index of progress was sought and a record obtained of the caries of to-day. So desperate did it appear to some that they boldly advocated crowning the first teeth, and methods were described for adapting artificial crowns to the front and back teeth of children of two-and-a-half years. From a certain standpoint it could not be denied that it was logically consistent, for admitting the extreme necessity of saving first teeth, there was nothing else which availed in severe cases. He thought it might be confidently affirmed that caries would be prevented. If it were true that caries was a germ-begotten disease, it belonged to the category of diseases admittedly curable or preventable, like typhoid

or cholera, or hydrophobia, &c. Mr. Bennett briefly dealt with the history of the inquiry into caries from its inception by Mr. W. Robertson in Birmingham more than 60 years ago to the present day, and urged the Microscopical Section to continue that inquiry at almost any sacrifice. What was desired was the marriage of practice and research. In every batch of new students some were to be found who possessed tastes and talents for chemistry, physics, and the like, and to those who were thus distinguished he suggested the option of one year's daily practice in a chemical or bacteriological laboratory, and if great aptitude was displayed it might even be continued a further year in substitution of one or two years of mechanical study in the workroom.

On the motion of Mr. SMITH TURNER, seconded by Mr. MURRAY, a hearty vote of thanks was accorded to Mr. Bennett for his address.

Mr. HOPEWELL SMITH read a paper on "The Healing Processes in the Dental Pulp." Very seldom indeed, he thought, could a lesion of the soft or hard parts of a tooth occur without a corresponding attempt, more or less successful, on the part of the pulp to ward off the attacks of the enemy. In the exercise of its highest functions it was concerned with the maintenance of the vitality of the tissues in the centre of which it was placed, and hence any invasion by disease or the occurrence of an accident was succeeded by a resistance which, in many cases, was highly satisfactory and the tissues were not devitalised. Osteoblasts, which were the great factors in the production of bone, were not found in the pulp, but the dento-genetic cells with which the tissue was fully supplied, did similar work. When the pulp was practically exposed they combined to repair the damage done by caries. In traumatism the process was exactly the same as when a tissue had been wounded and had been kept in an aseptic condition and properly protected from certain infective processes. In those cases the method of repair was known as healing by the second intention, or granulation. A third, but exceedingly rare class of cases, was where a tooth had been fractured, and the parts kept at rest until healing had been effected, an example of healing by the third intention. Cemental or dentinal union was only possible when pulp or periodontal membrane, or both, had received an injury which had not destroyed their reparative power, but which had induced a slight or sub-acute

form of inflammation, and thus stimulated the active cells to perform their functions. Mr. Hopewell Smith, in the course of his paper, summed up what was known of some of the healing processes in the pulp under various conditions.

The next paper was one by Mr. Storer Bennett on "Erosion," in which he described and criticised the experiments carried out by Professor Juamensky, undertaken for the purpose of studying, and, if possible, reproducing artificially, the appearances presented by erosion, and the experimentt carried out by himself (Mr. Storrer Bennett) on the same lines.

A paper was read on "Structural Changes in Human Enamel" by Mr. Leon Williams.

The adjourned meeting of the Microscopical Section was held on Tuesday morning, the PRESIDENT of the Section (Mr. F. J. Bennett), occupying the chair.

Mr. FRANK HARRISON exhibited a series of lantern slides illustrating the use of X ray photographs in connection with dental work, especially with regard to anatomical observations.

Replying to a short discussion, Mr. Harrison described the method he used in protecting his film. If he had a good area and could use a piece of glass he did so, a piece of glass similar to a little spectacle glass, which he enclosed in yellow paper and in a little bit of rubber dam. He secured the rubber dam so as to leave only one surface in front of the film, and fastened it at the back with sealing wax. He got a correct skiagraph film precisely fixed, and to bring about that condition he generally took a piece of stent, which he moulded in close apposition to the part in which the frame was to be fixed. When fixed, the patient closed his teeth, and when the stent was taken out it could be carved so as to receive the film against it. It was then secured again with ordinary sealing wax. The little sensitive film was then in correct apposition, and was retained properly. He found that the shorter he made the exposures the better pictures he got.

Votes of thanks to the readers of the papers and to the President and Secretary of the section brought the meeting to a close.

WE understand that the authorities of the Dental Hospital of London anticipate being able to commence building the new hospital within the next few weeks.

News and Notes.

WE are glad to hear that the Dental Hospital, Leicester Square, has received a donation of £250 from the Trustees of Smith's (Kensington Estate) Charity.

WE understand that some of the friends of Sir Edwin and Lady Saunders have formed the intention of commemorating the approaching fiftieth anniversary of their wedding day, and a small committee has been formed for the purpose, of which Mr. T. A. Rogers, of 23, Endsleigh Gardens, W.C., has kindly consented to be chairman, and Mr. Ashley Gibbins, of 18, Stratford Place, W., to be treasurer. The subscription is not to exceed one guinea. These gentlemen will be happy to give any further information desired upon the subject.

The following gentlemen, having passed the necessary examinations, have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons, England: W. M. Anderson, L. F. Barton, W. H. Bean, Surg.-Captain, M.R.C.S., Eng., L.S.A. Lond., F. R. Bishop, G. P. Cardell, A. E. Carden, H. Cardwell, F. Coleman, T. W. Garne, Z. J. Gibson, H. C. Hessenaur, F. Holding, G. F. W. Jennings. H. W. Robey and H. Winder, of Charing Cross and the Dental Hospital of London. S. d'A. Corbett and A. R. Marks, of St. George's and Dental Hospital of London. W. W. James and O. C. Penfold, of Middlesex and Dental Hospital of London. W. A. Taylor, of Westminster and Dental Hospital of London. F. L. Etheridge, of St. Bartholomew's and National Dental Hospital. H. M. Griffiths, H. Tattersal, of Middlesex and the National Dental Hospital. W. H. Loosely, C. D. Antree, A. L. Rowley, E. Stringfellow, D. P. Tracey, R. Umney, E. W. West and T. H. Wilkinson of Guy's Dental Department and School. J. Harper, M.R.C.S.,

L.R.C.P. ; F. W. S. Stone, M.R.C.S., L.R.C.P., of St. Thomas's and Guy's Dental Department. W. J. Grewcock, H. P. Joscelyn, C. E. Mountford, and H. J. Paterson of Mason University, Queens, General, and Dental Hospitals, Birmingham. R. C. Hott, E. G. Narramore, A. M. Partridge and W. A. H. Saul of University College, Royal Infirmary and Dental Hospital, Liverpool. W. H. Jones, W. Nicholson of Queen's College, Royal Infirmary, and Victoria Dental Hospital, Manchester.

Abstracts and Selections.

TO MAKE A PLATE STICK.

By J. G. HARPER.

HERE is a method of making a plate stick, no matter what its shape or condition. With a soft lead pencil mark on the model the outline of the plate; going across the heel of the plate, with a knife, make a groove, following the pencil mark ; make a solution of rubber, with which varnish the groove, and then place in the groove a narrow strip of soft rubber, such as is used for making rubber stamps ; the case is waxed up to the strip, and in investing allow the plaster in the lower part of the flask to come above the strip, so as to confine the same when the flask is closed. If preferred, velum rubber may be used to make this soft rim.—*Dental Weekly*.

FOR DRILLING GLASS.

AN optician recommends the following method : Dip a drill-borer heated to white heat, first in quicksilver, whereby it is excellently hardened, and sharpen by grinding on a whetstone. If the drill thus prepared is moistened with a saturated solution of camphor and oil of turpentine and the bore-hole is kept rather moist, glass may be drilled like wood.—*The Dental Weekly*.

ANOMALY OF INTERNAL CAROTID ARTERY.

DR. THOMPSON, of Cincinnati, describes an interesting abnormality of the left internal carotid artery in a woman, aged 29 (*The Laryngoscope*, January, 1898). The vessel lay immediately beneath the pharyngeal mucous membrane, behind the posterior pillar of the fauces. Dr. Thompson remarks that it would be interesting to think what might have happened in this case if an operation for adenoids had been required in childhood.—*Treatment*.

ADHESIVE CEMENT FOR PLATE AND BRIDGE WORK.

It is always desirable to have on hand a reliable cement for repairing plaster impressions, for the temporary adjustment of clasps upon plates, for the "waxing up" of teeth in plate or crown work, &c., and the following formula is presented for that purpose by Professor W. F. Litch:—Take of pitch, 100 grains; guttapercha, 100 grains; gum dammar, 150 grains.

Process.—Melt the pitch in an iron pot over a small sand-bath; cut the guttapercha into small pieces and add piece by piece, stirring constantly until all are thoroughly dissolved, then add the gum dammar, and continue stirring until it is melted and completely mixed with the other ingredients.

Finally pour the melted mass into a large basin of cold water, and before it has entirely hardened remove and cut into strips of suitable size.—*International*.

EROSIONS AS FOUND IN THE ORIENT.

By C. L. SNYDER, D.D.S., Freeport, Ill.

A YEAR or so after I became settled in Singapore I began to make a study of these cases. I found that out of one hundred patients that came to me for dental services fifty-seven were suffering more or less with erosions. Scarcely ever did I find the perfectly healthy gums; the tendency was for them to recede and the unnatural

exposed part of the tooth then became sensitive. The attacks seem to be about the same upon male and female. A great difference exists in nationalities ; the English, who are the worst sufferers, are followed closely by the French. The Armenians seem to be affected equal to the English ; but as they are comparatively few in number in Singapore I cannot lay down any definite percentage. The high class of Malays and Chinese comes next, while the cooly class seems to be little troubled. One peculiarity of this complaint is that most Europeans never experience any trouble before leaving their native land. The well-to-do, that is those who live high, seem to be the worst sufferers, especially the consumers of wine and other beverages. I do not mean drunkards, as drunkenness is seldom if ever seen in the orient, especially among the better class.

I now began questioning my patients concerning their physical condition. I directed my inquiry more particularly as to whether they or their parents ever suffered with gout, and found that about 70 per cent. were suffering with gout or were the offspring of gouty parents. I grew very enthusiastic over this investigation ; I became satisfied that erosion was a manifestation of gout. After a time I found conditions that did not harmonize with my theory of erosion and gout and I began to make further investigations, not only among people suffering with erosion, but more particularly with people who were free from it. Much to my surprise I found that many who had perfect teeth and whose gums presented a decidedly healthy condition were among the worst sufferers of gout, and that the Armenians and Malays, especially the former, who suffer severely with erosion, are scarcely ever known to be troubled with gout.

Summing up these investigations I came to the conclusion that erosions were peculiar to three conditions : high living, especially consumers of wines ; a gouty diathesis, and climate. There is no doubt but what the climate of that tropical island has more or less effect on the system in general, and this in a short time manifests itself upon the teeth. It is my candid opinion that erosion is caused by an acid condition of some kind, peculiar to a physical condition of the system similar to that found in gouty subjects, and that this condition is due principally to the diet, is hereditary, and is much hastened by a hot, moist climate.—*Review.*

A SUBSTANTIAL PORCELAIN FACE CROWN WITHOUT A DISPLAY OF GOLD.

IN making lower bicuspid and molar crowns with porcelain faces, the effect of the facing is almost entirely lost from the fact that the cusps show so much more than the facings. To avoid the display of gold, and to secure a neat, easily-made and substantial piece of work, the following method may be used: After preparing the root in the usual way, cut back the labial or buccal side of the tooth as though you were preparing for a thick porcelain face. Make the band as for a "shell crown." After it has been properly fitted to the root, remove it and cut away the labial or buccal side as you did with the tooth, leaving a narrow band at the gum-margin. Select a rubber tooth of the proper size and length to fit in the remaining part of the band, giving the proper articulation. Grind the shoulder off of the back of the tooth at the point where the pins enter; also grind off the heads of the pins. Next wrap the entire tooth (except the grinding surface) with very thin gold (or platinum), puncturing holes for the pins to enter and making a lap of the gold on the back of the tooth between the pins. Then cut away the surplus gold beyond the end of the tooth and lay it upon asbestos and solder without investing. The tooth thus covered is placed in the band and soldered, after which the gold covering the face is cut away, making a crown with porcelain face and cusps. The rubber tooth rests within a pocket of gold and does not rely on the pins for support. The gold being soft, it can be closely adapted to the tooth, making a very neat and cleanly piece of work.

If it is desired, a Logan pin can be clasped between the pins of the tooth, before making the first solder, and secure a pin for the crown without any additional work.—*Dental Weekly*.

M. NICHOLAS DUBOIS DECHEMANT, AND PORCELAIN DENTURES.

By WILLIAM H. TRUEMAN, Philadelphia, P.A.

Dr. LEDYARD's paper upon Ancient Dentistry, recently published, may, perhaps, accomplish much in correcting and adding to our knowledge of dental history. Now and again, a paper of merit, by

attracting attention to a subject, may pass beyond the bounds contemplated by its writer and be widespread and lasting in its usefulness. In dental history there is very much to learn and very much to unlearn, and this paper, by bringing before the profession a rare copy of a somewhat rare publication, may open the way for a better understanding of how, when and where, and by whom porcelain was first adapted to dental use. And here permit me to say to those who desire to study the early history of our profession, that they will find but little reliable information regarding it in any early work in the English language. Prior to 1750 there is record of only three works by English writers. One, by Joseph Hurlock, is a small octavo volume of some 60 pages, upon first dentition for the instruction of mothers, nurses, and others having the care of infants. The other two I have not seen, but know them to have value only as curios. Before that date, French and Continental writers had fully covered the field. In my judgment, modern dental literature dates from the publication of the first original investigation in dental histology by Eustachius, a teacher of anatomy at Rome, in 1563, and Hemard's practical work, emanating from Lyons a few years later. The educational impulse started by Paré in France, about 1550, or a little later, bore in his native land abundant fruit. Wherever the influence of the schools established as the result of it, or the influence of the excellent schools in Italy reached, our profession felt the uplift that education always gives. We see it in the character of the writings, and the professional spirit displayed by the writers. This benign influence did not cross the English channel; an impassible political barrier stopped it there, and there was nothing on the other side to take its place. Hence the wide difference between the French and English dental writers of Chemant's time, and for years later. The French exhibited the true professional spirit; they had no secrets to keep, but freely published for the benefit of their professional brethren all they knew, and in professional knowledge they were about a century in advance of our cousins across the sea. Find, if you can, anything to equal Fauchard, by an English writer, within a century of the publication of his excellent treatise in 1728; and read with patience, if you can, the constant assertion of English writers that there was little to be learned; indeed, that there was no dental literature until they began to write.

As an example of fulsome advertising, among many competitors, the book of M. Nicholas Dubois de Chemant caps the climax. My copy is of the fourth edition, dated 1804. As a frontispiece it has a well-executed portrait of the author, with two verses of a poetic tribute from an octogenarian patient, the full effusion being given in French and English at the end of the book. Permit me to copy one verse, a fair sample of the rest :

Plants of the garden or the field,
Ye turnips white, ye carrots red,
Ye cucumbers and olives green,
And artichokes with tow'ring head,
Approach and dare the drawbridge pass
That guards my mouth with double chain,
Downward with ease descend your way,
But hope not to return again.

Regarding his claim to be the discoverer of porcelain dentures, I have not at hand sufficient evidence to pass judgment. In 1821, Joseph Audibran, a dentist of Paris, published an exhaustive work entitled, "*Traite Historique et Pratique sur les Dents Artificielles Incorruptibles, contenant les procédés de fabrication et d'application.*" It is a book of nearly 200 pages, discussing the various suggestions which are supposed to have led up to the invention of porcelain teeth, the invention and the improvements made from time to time. He says that an apothecary of Saint-Germain, named Duchateau, being annoyed by his artificial teeth of bone retaining the odours, to which, owing to his avocation, they were constantly exposed, conceived the idea of having them duplicated in hard porcelain. In order to have this idea carried out, he applied to M. Guérard, a manufacturer of porcelain, then residing at Paris in the Rue du Temple, near the boulevard ; and between the two, the first denture upon hard porcelain was executed, and proved to be a success. Finding the new denture satisfactory, enchanted in having discovered a material suitable for artificial dentures free from the inconveniences associated with those formerly used, he communicated the process to the Academy of Surgery in 1776. Audibran considers fully the question whether this idea had been suggested to Duchateau by remarks made by Fauchard or other writers. He is not disposed to think so ; indeed, he questions whether the remarks they made referred to porcelain at all. They desired something which should give greater durability to their work, something that should take the

place of enamel upon the natural teeth, and something which would impart to the bone base a colour resembling that of the natural gums. That any writer had in mind the adaptation of porcelain to this use is purely conjecture, and does not in the least detract from M. Duchateau's honour as the discoverer and inventor of porcelain artificial dentures. It was a dozen years after that M. Chemant made arrangements with Duchateau for instruction in the use of this material for this purpose, and the next year, 1789, the first edition of his work, entitled "*A dissertation sur les avantages des nouvelles Dents et Rateliers sans odeur*," was published, in which he announced himself as the discoverer. Then followed a controversy which resulted in Chemant quitting France, and settling in England. In the absence of the evidence pro and con, contained in a number of pamphlets published about this time, and in the proceedings of the Academy, it is impossible to get at the true story. Those interested in the subject will find Audibran's work very interesting. It is a history of an important epoch in dental prosthesis, written by one well acquainted with the men who took part in the events of which it treats, and who shows every evidence of a desire to do impartial justice to all. About half the book is taken up with a description of the process of making porcelain teeth and adapting them to the mouth, with formulas, etc.

As has been the case with many useful inventions, this was not appreciated when first introduced. Lafogue, writing in 1802, dismissed it in two lines, stating that it was too friable to be of any service. In England it was frequently spoken of with distrust, until late in the forties. It was introduced into the United States about 1817, and was soon made of practical usefulness.

In conclusion, permit me to repeat, that for information upon this subject, indeed upon all matters concerning the early history of our profession, its science or its progress, it is much more satisfactory to consult the original writers, mainly in Latin or French, a few in Italian, and a few in German. The Germans, however, require careful study before being accepted as authority. They are, nevertheless, worth looking into. No English writer, prior to Nasmyth, can be relied upon; indeed, they are all misleading. Of the American writers, those who have followed the English have simply repeated their errors. Very few have given the subject much attention. Most earnestly would I commend the careful study of

Fauchard, Bourdet and Jourdain, in the language in which they were written, not neglecting their compeers who have, perhaps, equal merit.—*Dental Practitioner*.

THE CONNECTION BETWEEN DISEASES OF THE EYE AND DISEASES OF THE TEETH.

By CHARLES STEDMAN BULL, A.M., M.D., of New York.

THE relation which is supposed to exist between affections of the teeth and diseases of the eye has been familiar to us all for many years, and the belief in its existence is almost as old as the science of medicine itself. The difficulty has always been to explain exactly what this connection is, and how the diseased process is propagated from the mouth to the eye, or, in the reverse direction, from the eyes to the mouth.

Attempts have been made to classify the lesions of the eye which are supposed to be of dental origin by dividing them into two classes,—viz., those lesions which are of reflex origin and those which are of an inflammatory nature. All such attempts, however, have been generally too vague and too positive, too schematic; for a reflex lesion may later become an inflammatory lesion, and must thus come to be regarded as the irritative phase of an inflammatory phenomenon. In these latter days of what may be called the "microbic craze," we are, perhaps, too prone to consider the so-called reflex lesions as more likely to be of microbic origin, thus restricting the reflex ocular phenomena within still narrower limits.

Attempts have been made in the past by the advocates of the reflex theory to regard all lesions of the anterior segment of the eyeball, in cases of dental disease, as due to some disturbance of the trifacial nerve; while lesions of the posterior part of the eyeball are considered to be of an inflammatory, infectious nature, propagated directly from the diseased teeth or upper jaw to the orbit, and thence to the eyeball. This is a fanciful classification, which is not justified by our clinical or pathological knowledge.

It is probable that lachrymation, due to irritation of the terminal filaments of the trifacial nerve, is of reflex origin, as may be also amblyopia with peripheral narrowing of the visual field. In the latter case, however, it is possible that the irritation may be propagated by inflammation along the optic canal, where the optic nerve may be compressed or inflamed by the septic elements of

inflammation, infected, and thus give rise to defects of vision and a narrowing of the visual field.

It is very possible that a dental lesion causing a sensitive impression in the trifacial may reach the great sympathetic nerve, or the ciliospinal centre, or even the bulbar enlargement of the cord, and give the impulse to a greater or less number of neurons, according to the degree of impressionability of the subject or for other reasons. Any or all of these reasons would suffice for the retention of the sensitive impressions in several nuclei and the production of varying motor or vasomotor phenomena.

Congestive phenomena of reflex origin, by means of irritation of the filaments of the trifacial, are said to cause dilatation of the vessels of the eyeball, and even to set up keratitis and iritis. This, however, is by no means certain, and is more than doubtful. It would seem more rational to believe, for example, in a case of empyema of the maxillary antrum due to dental caries, followed by iritis, that an infectious osteoperiostitis had ensued, with metastasis of the pus through the medium of the blood-vessels and lymphatics, to the tissue of the iris and choroid. This method of propagation has not yet been proved to occur, but it is highly probable. It is not yet positively known that infectious microbes coming from a suppurating focus must always set up the same suppurative inflammation in a new tissue when carried there by the vessels and lymphatics. Cases of iritis occurring in the course of abscess of the maxillary antrum with dental caries are probably of pure microbic origin. Mere conditions of irritation and congestion of the eye may be the starting-point of a microbic infection.

We know that infection of dental origin may extend to the sinuses of the face, not only the antrum, but the frontal sinus, ethmoid sinus, or sphenoid antrum, by the natural opening into each of these sinuses. Infectious inflammation of the maxillary antrum, consecutive to an alveolar dental periostitis, frequently extends to the orbit, and these cases of cellulitis of the orbit are due in most instances to periostitis of the floor of the orbit extending from the antrum. The pus may extend to the orbit by stripping the periosteum from below upward, or, more frequently, through the medium of the communicating veins. The veins of the maxillary sinus and of the periosteum of the upper jaw open generally into the ophthalmo-facial vein, which, coming from the pituitary membrane,

passes through the sphenopalatine foramen, anastomoses with the intraorbital veins, and empties into the facial vein below the level of the malar bone. Inflammation of this vein, of microbic origin, might of itself cause a thrombophlebitis of the cavernous sinus. The inflammatory process might also follow the course of the lymphatics. Thus alveolar dental periostitis may cause thrombophlebitis of the cavernous sinus and secondary orbital phlebitis, not only when starting in the superior maxilla but also when confined to the inferior maxilla.

An interesting fact has been brought out by Reynier and Parinaud. They have proved that in certain cases of orbital cellulitis from alveolar dental periostitis and abscess of the antrum, the pus does not reach the orbit by stripping up the periosteum, for there is no periosteum. The pus spreads through the bone itself. Pus starting in an alveolus may perforate it ; but, on the other hand, it may not destroy the alveolar wall, but pass through the canaliculi or foramina at the apex of the alveolus, and thence into the infraorbital notch, or through one of several orifices situated in front of the lachrymal sac, in the ascending ramus of the superior maxilla. These orifices often communicate directly with the nasal fossæ or antrum, so that the pus coming from a carious alveolus may reach the orbit either by passing through the sinus or by avoiding it.

In children the maxillary sinus is much smaller than in the adult, and does not bear the same relations to the orbit. It is effaced in part by the development of the alveoli of the first and second dentition. The relation of these alveoli vary with the age of the subject ; but in some cases the alveolus of second dentition may extend as far as the orbital arch. In the case of the canine tooth, the alveoli of the first and second dentition, more or less exactly superimposed, the one on the other, often communicate with each other by an orifice, which gives passage to both nerve and vessels, and later, by the absorption of the wall of separation, the one resulting alveolus ascends as far as the orbit.

In both children and adults the infectious focus may remain localized, or it may spread by various channels more or less rapidly and gain progressively the sinuses of the face and base of the skull, through the veins of the optic foramen or vault of the orbit.

It would seem wiser to give up any attempt to classify the ophthalmic lesions met with in connection with morbid processes in the teeth, and to consider the subject under two heads : *First*, lesions of the eye met with in the course of primary and secondary dentition. *Second*, lesions of the eye occurring in the course of abnormal diseased processes in the teeth.

First. Lesions of the eye met with in the course of dentition, both primary or early and secondary : The connection existing between certain affections of the eye and early dentition is very close, and is recognised by all practising physicians. Some of the ocular manifestations met with in the course of early eruption of the first teeth are sympathetic in nature and probably reflex in origin, such as photophobia and lachrymation. Others are of a distinctly inflammatory nature, though also reflex in origin, such as the various forms of ulceration of the cornea and conjunctiva. Catarrhal conjunctivitis, phlyctenular conjunctivitis and keratitis, ulcers of the cornea, lagophthalmos from spasm of the levator of the upper lid, marginal blepharitis, mydriasis, and a peculiar form of cataract are affections of the eyes not infrequently met with during early dentition. Many authors have cited such instances. Sous, in the *Journal de Médecine de Bordeaux*, 1896, reports an obstinate case of keratitis during early dentition. Auge, in 1881, published a paper on blepharoconjunctivitis during teething. Foucher, in 1895, published cases of herpetic conjunctivitis ; as have also Tavignot, in 1871, Galezowski, in 1888, Chevalier and Décaisne, in 1869, and, more recently, Knies, in 1895. The case reported by Sous is interesting. A child was attacked by diffuse keratitis of the right eye, and a cure followed lancing of the gums. In the following year the left eye became inflamed in the same way, and the process involved not only the cornea but the sclera also. A tooth was removed to allow a deviated tooth to take its normal position, and in three days the cornea had resumed its normal transparency and all signs of inflammation vanished. All these so-called superficial inflammations of the eye are generally considered to be reflex, and are relieved and generally cured by incisions in the swollen gums, I have under my care at present a child, aged ten months, in excellent physical condition, with good digestion, who for nearly three months has had a series of phlyctenular ulcerations on the margin of the cornea in both eyes, appearing in groups, and

accompanied by great photophobia and considerable general conjunctivitis, and very pronounced swelling and engorgement of the gums. Local treatment has proved of little use, but on every occasion after lancing of the gums there has been an immediate improvement in the photophobia and the ulcers began to heal. The teeth have pushed themselves forward very rapidly, and with each new attack of swelling of the gums a fresh crop of small ulcers have appeared on the margin of the cornea.

One of the most interesting ocular lesions met with in connection with difficult early dentition is the zonular cataract. Horner was one of the first to call attention to this in 1864,⁷ and he supposed it to be due to the influence of infantile rickets. Arlt first noticed the coincidence of infantile convulsions and zonular cataract, and thought that in the convulsions met with during dentition some solution of due physiological contact took place between the denser central portion and the more fluid peripheral portion of the lens, and that this mechanical lesion manifested itself as a stationary zonular or lamellar opacity. Horner noticed that these patients showed cranial deformities and malformation of the first teeth, which he attributed to rickets. Out of sixty-five cases of zonular cataract, forty-eight had infantile convulsions, and in thirty-six cases there were dental and cranial deformities. The teeth are thick and coarse, the incisors are cubical, and the enamel terminates abruptly on the neck of the tooth in a swollen ridge. The horizontal furrows in the enamel become visible to the naked eye, and near the cutting edge a horizontal row of round holes marks the position of one of these excavated grooves. The body of the tooth terminates in a convex border at the cutting edge. Sometimes the enamel is wanting in the grooves and the discoloured dentine shows through. Story, in 1886, reported nine cases. He does not believe that rickets is always the cause. The dental defect is due to an arrest of development. The period of the growth of the enamel is of limited duration, somewhere between the sixth and the ninth month. He thinks that there is a close similarity between the lens and the dental enamel in origin and development, and that it is, therefore, natural that they should be affected by the same pathological agents. Both are formed by an involution of the epithelium from the surface of the embryo, and in both the growth proceeds from the deeper layer of this epithelium, when separated from the rest of the

epiblast by the interposition of a mesoblastic layer. There is this difference, however : the enamel organ has only a brief functional existence and then disappears, but the growth of the lens proceeds during many years.

Hutchinson published a paper in the *Lancet* in 1875, in which he stated that these imperfect teeth were, as a rule, met with only in connection with the zonular cataract of early childhood. The latter was always symmetrical and quite stationary, and was not associated with any particular diathesis. The defective development of the teeth was seen in the incisors, canines, and first molars, the latter being the test-teeth. The bicuspid usually escape. In contradistinction to Story and Horner, he believes that the permanent teeth are alone affected. The incisors and canines are pitted, dirty, and rough, with spinous edges. The non-development of the enamel and the erosion of the exposed dentine are the essential features. With these teeth and the zonular cataract there is usually a history of infantile convulsions.

Some have held that these dental defects usually result from inflammation of the gums in infancy, and that mercury is the chief cause, the mercury having been administered during the period when the enamel was undergoing calcification.

Hutchinson believes that the connection between zonular cataract and convulsions is universal. Weiss (1876) holds the same views. The general testimony seems to be in favour of the views that when zonular cataract is found with a history of convulsions, the permanent teeth will certainly be malformed. The distinct characteristic of a genuine "convulsion tooth," unaffected by congenital syphilis, is the shortness of its enamel, the dentine projecting beyond the enamel edge and being more or less honeycombed.

Second. Lesions of the eye occurring in the course of diseased processes in the permanent teeth. The reflex theory has many strong advocates, one of the most recent being Knies (1895) and from the time of Mackenzie, in 1833, down to the present day most writers on ophthalmic diseases have given more or less adhesion to the doctrine. It is only when we reach the period of bacteriological investigations that the reflex theory of origin begins materially to lose ground.

Leber (Graefe und Saemisch, *Handbuch der gesammten Augenheilkunde*, vol. v., 1877) reports numerous observations of the occurrence of visual disturbance through irritation of the extraocular

branches of the trigeminus in diseases of the teeth, such as simple dental caries with severe continuous toothache and sensitiveness of the tooth to pressure, or suppuration in the alveoli with prolongation of the inflammation to the antrum. The teeth involved are generally in the upper jaw, and usually the molars. The eye symptoms are photophobia, retinal hyperæsthesia, photopsia, loss of accommodation, and, more rarely, amblyopia and amaurosis. All these symptoms simulate sympathetic troubles. The ophthalmoscopic evidence may be negative, though occasionally there are signs of retinitis and optic neuritis.

Desmarres (1858) believed that there was a real pathological connection between diseases of the eye and diseases of the teeth, and that the connection might be either direct by continuity of tissue or reflex through the nervous system. The lesions on the side of the eye might be either organic or functional.

Nuel (Wecker et Landolt, "Traité Complet des Maladies des Yeux," vol. iii., 1887) is even more positive in his statements. Generally the superior dental nerves are involved. If amblyopia is really present, one or more molars in the upper jaw will be found sensitive. If the superior dental nerves are involved, there will always be conjunctival and ciliary injection, with ciliary neuralgia, lachrymation, photophobia, and sometimes blepharospasm and spasm of accommodation. Nuel considers these symptoms all reflex: reflex vasomotor dilatation in the conjunctival and ciliary vessels, reflex contraction of the muscles of the face, and reflex innervation of the lachrymal gland. If amblyopia exist, there is usually also narrowing of the visual field, and the vision becomes worse with each fresh attack of dental neuralgia.

Galezowski (1872) is an advocate of the reflex theory, but believes that the reflex influence is exerted not in the brain but in the ganglion or node of Gasse, and works in both ways, from the teeth to the eyes and *vice versa*.

Without quoting the names or opinions of the long list of authors who have expressed their views on the subject, it seems to be definitely settled that a relation exists between certain lesions of the eye and certain diseased conditions of the teeth. Knies formulates the modern views as follows:

1. Conjunctivitis of the phlyctenular variety is known to be intimately connected with teething, even with the second dentition.

2. It is undoubtedly true that keratitis, iritis, glaucoma, muscular paralysis, asthenopia, amblyopia without visible lesion, supraorbital neuralgia, and exophthalmos with and without orbital cellulitis, are caused directly or indirectly by carious teeth.

3. When paralysis of accommodation appears during an attack of toothache it probably results simply from the lack of vigorous innervation on account of the distressing pain.

4. Muscular insufficiency or paralysis, with diplopia, may also be explained as paresis due to enfeebled innervation.

5. Spasm of accommodation and nictitation are both reflex symptoms frequently observed with toothache, as is also neuralgia of or one more of the branches of the trifacial nerve.

6. Amblyopia and amaurosis are by no means infrequent complications of carious teeth. Any positive ophthalmoscopic evidence should lead us to assume a common cause for the dental pain and the visual disturbance.

7. A spasm of the levator muscle of the upper lid leading to the appearance known as lagophthalmos has not infrequently been described in connection with pain in carious teeth.

8. Orbital cellulitis with development of abscess in the lower lid has been noted in caries of the teeth of the upper jaw with the development of abscesses round the diseased teeth.

9. Exophthalmos, or protrusion of the eye, may be caused by serous infiltration of the orbital tissue directly connected with disease of the alveoli.

10. Conversely, pain in the teeth of the upper jaw is by no means an infrequent symptom in iritis and cyclitis with severe neuralgic pain in the branches of the trifacial nerve; and toothache has been unmistakably recognised as one of the prodromal signs of glaucoma.

For the sake of convenience we may perhaps divide the lesions of the eye met with in connection with lesions of the teeth into three groups, as follows:—

1. Those dependent on vasomotor disturbances, which would include all classes of disturbance of nutrition, all inflammatory cases, and the reflex cases, such as amblyopia and amaurosis without ophthalmoscopic evidence.

2. Those dependent on disturbances of sensibility such as ciliary neuralgia and the various forms of asthenopia.

3. Those characterized by disturbances of motility, including all cases of spasm and paralysis of the muscles of the eye, including the iris and ciliary muscle.

The eye complications of dental disease are of varied nature. Beginning with the most superficial structures of the eye, the first subject that will engage our attention is the *eyelids*.

Herpetic eruption of the lids in the course of the terminal branches of the fifth nerve is often met with in connection with carious teeth, and resists all treatment until the teeth are extracted or properly filled.

Hutchinson has reported an interesting case of constant spasmodic contraction of the levator of the lid in a lady who had four decayed molar teeth in both jaws on the corresponding side. These were removed, and all ciliary neuralgia at once ceased, but the spasm remained. The left upper first molar contained an amalgam stopping, which, on being removed, revealed an exposure of the pulp. This tooth was also removed, and improvement in the muscular spasm began at once, and it shortly stopped altogether. This may be regarded as purely reflex.

On the other hand, Redard has reported a case of paralysis of the levator of the lid which resisted all treatment. A careful examination of the mouth showed extensive caries of the upper third molar, and, on this being removed, the paralysis began to improve, and in a few days the lid had completely regained its power.

Ely has reported a case of paresis of the orbicularis muscle associated with spasm of the ciliary muscle in a patient with an abscess at the root of the third upper molar on the right side. This tooth was extracted, and the ocular symptoms immediately disappeared.

When we come to consider the lesions of *cornea* and *sclera*, the number of cases reported in connection with diseased teeth is almost numberless. Ulcers of the cornea, superficial and interstitial keratitis, and scleritis are repeatedly mentioned. Marginal phlyctenular keratitis is a very common accompaniment of early and second dentition as well as of carious teeth in the adult. Ely reports a typical case in a man aged 35, who had severe neuralgia of the right side of the face, with ulcer of the conjunctiva and scleritis of the right eye. There was in the right upper canine tooth an ulcerated spot just below the gum, and the nerve was exposed. The nerve was destroyed, the ulcerated spot treated, and the neuralgia

ceased at once, and in a few days the eye became perfectly well. Hern has also reported a number of cases of scleritis of undoubted dental origin. *Iritis* has also been observed in connection with interstitial keratitis in cases of carious teeth, and the teeth being properly cared for, the iritis promptly got well.

The loss of accommodation due to paralysis of the ciliary muscle has received special attention from several authors.

Schmidt-Rimpler (Graefe und Saemisch, *Handbuch der gesamten Augenheilkunde*, vii. p. 72, 1877) gives the results of his experience in 92 cases, and draws the following conclusions :—

1. In consequence of the pathological irritation of the dental branches of the trifacial nerve there may result more or less marked limitation of the range of accommodation.

2. These limitations of accommodation may be either unilateral or bilateral. When unilateral, they always appear in the eye on the affected side.

3. These limitations of accommodation occur most frequently in the young, while at an advanced age they occur rarely or never.

4. They are due to an intraocular increase of tension, proceeding from a reflex irritation of the vasomotor nerves.

In 73 of the 92 cases reported, the accommodation was diminished far below the normal standard. In most of the cases the accommodation was regained after the removal of the trouble in the teeth, either by the cure of the carious process or by the extraction of the diseased teeth. The degree of limitation of the accommodation varied greatly.

Schmidt-Rimpler believes that the irritation of the branches of the trigeminus due to carious teeth causes in a reflex manner an irritation of the vasomotor nerves of the eye, and that irritation of these vasomotor nerves produces an increase of the intraocular tension, which diminishes the accommodation.

Ely (*New York Medical Record*, March 11, 1882) reports in detail the case of a man, aged 31, who had not only paralysis of accommodation in the right eye, but also paralysis of the right internal rectus muscle. The root of the first upper molar tooth on the right side was denuded, rough and sensitive. The nerve of the tooth was dead, the alveolar process was absorbed, and there was extensive suppuration in the adjacent parts. The condition of the tooth was rectified, and the symptoms all disappeared.

Galezowski (*Progrès Médicale*, No. 29, 1888) has an article in which he draws similar conclusions to those of Schmidt-Rimpler.

Dunn (*American Journal of Ophthalmology*, October, 1891) reports a case of paralysis of accommodation, with impaired vision and severe ciliary neuralgia in a patient, who was found to have an abscess at the root of the second molar tooth in the lower jaw on the left side. The tooth was extracted and the alveolar cavity antiseptically treated, and in a few days all the ocular symptoms entirely disappeared.

When we come to consider the subject of amblyopia and amaurosis, whether reflex or not, in connection with the existence of carious teeth or lesions in the jaw, the list of authors becomes very large. From the date of publication of Mackenzie's "Treatise on Diseases of the Eye," in 1833, to the last edition of Swanzy's "Handbook of Diseases of the Eye," in 1897, scarcely a text-book has appeared which does not treat more or less distinctly of the subject. Hocken, in 1842, published a treatise on amaurosis, in which a number of cases are reported as due to carious teeth. Most of the cases reported have been associated with dental neuralgia of the molars of the upper jaw, and the lesion has been caries, sometimes complicated by abscesses of greater or less extent at the roots of the teeth. It should be understood that all cases of amblyopia or amaurosis considered under this head have been those in which no ophthalmoscopic evidence of disease has ever been noticed from the beginning to the end of the trouble. There is usually lachrymation, photophobia, conjunctival or ciliary injection, and occasionally spasm of accommodation, but the fundus remains healthy. The defect of vision may be unilateral or bilateral, and when the latter exists the vision is always worse on the side corresponding to the diseased teeth. If the defect in vision is marked, the field of vision is usually concentrically narrowed, and both vision and limitation of the field of vision become worse with each exacerbation of the neuralgia. The photophobia in these cases is due to the existing retinal hyperæsthesia.

Park (*Annals of Ophthalmology*, January, 1893) has reported a case of a patient who complained of headache, loss of vision in the right eye, and some photopsic manifestations. A few days later vision in the right eye was reduced to perception of light. The

ophthalmoscopic examination was negative. There was concentric narrowing of the field of vision. An examination of the mouth revealed five decayed teeth in the right upper jaw, and an artificial plate was found resting and pressing on the decayed roots. The roots were all extracted, and vision began to improve at once, and in two months was completely restored.

In the *Courier Médicale* for 1890 will be found the report of a case of a lady, aged 30, who complained of failing vision in the left eye accompanied by severe toothache in the second left upper molar tooth. In one week from the onset of the attack the left eye became entirely blind, without any ophthalmoscopic evidence of disease. The diseased tooth was extracted, and pus immediately flowed from the alveolar cavity. Examination revealed a small piece of wooden toothpick, which was removed from the cavity, and in a few days there was complete restoration of vision.

I have recently had under my care a lady who presented herself complaining of lachrymation, photophobia, and loss of accommodation in the right eye. In two days vision in this eye began to fail, and the field of vision became concentrically narrowed. Repeated ophthalmoscopic examinations revealed nothing abnormal. In about a week from the onset severe neuralgia of the right side of the face set in. She was sent to her dentist, who discovered that the second molar in the right upper jaw, which had been filled, was very sensitive to pressure. The filling was removed and the nerve found inflamed. At this time the vision had been reduced to perception of light. The nerve was destroyed and the cavity was again filled. The neuralgia, lachrymation, and photophobia ceased at once, and in less than a week vision was completely restored, and the field of vision regained its normal extent.

Proceeding next in the course adopted, from without inward, from the superficial affections of the eye to the deeper and more serious lesions, in connection with diseased processes in the teeth, we come to consider *inflammation of the optic nerve*, or *optic neuritis*, including the immediately surrounding zone of the retina. Of this disease we have a number of undoubted cases on record.

In 1893, Hermann (*Centralblatt für Praktische Augenheilkunde*, December, 1893) reported a case of inflammation of the optic nerve of the variety known as papillitis, occurring in a patient in whom no cause for the lesion could be found until the teeth were examined,

when a carious tooth was found accompanied by toothache. Unfortunately, the extraction of the tooth and the cure of the suppurative process had no beneficial effect upon the inflammatory process in the optic nerve.

Despagnet (*Annales d'Oculistique*, May, 1893) reports a very clear and interesting case occurring in a woman, aged 24, in whom there was optic neuritis with dilatation of the iris. An examination of the mouth showed caries of the last molar of the upper jaw on the corresponding side, with extensive periostitis of the alveolar process and a sequestrum of the alveolar arch. There was suppurative inflammation in the antrum directly connected with the diseased alveolus, and the suppurative process was found to have extended to the orbit as far back as the foramen opticum and here had involved the optic nerve.

Hirsch (*Wiener Medicinische Wochenschrift*, 1893, No. 34) reports a case of optic neuritis ending in atrophy of the nerve and blindness, in which the disease evidently started in the left second upper molar. There was an extensive abscess involving the gum, cheek, and lower lid, which had perforated externally. A probe could be passed from the external opening in the cheek along the floor and inner wall of the orbit. The infection had extended from the tooth-cavity and set up alveolar periostitis, which had involved the antrum and floor of the orbit, and set up orbital cellulitis, inflammation, and eventually atrophy of the optic nerve.

Feuer (*Annals of Ophthalmology*, 1895) reports two cases of optic neuritis ending in a complete cure and restoration of vision after extraction of the carious teeth. In the first case there were three decayed teeth with osteoperiostitis of the alveolar arch and antrum, with exophthalmos and optic neuritis. In the second case the wisdom-tooth in the right upper jaw was diseased, with periostitis of the alveolar arch and of the floor and inner wall of the orbit. The loss of sight was complete in the right eye, and coincided with the occurrence of inflammation and pain in the orbital floor. The vision was completely restored in three months.

Cases of this sort might be multiplied almost indefinitely, but enough have been presented to show the connection which actually exists between diseased teeth and the inflammation of the optic nerve.

Choroiditis, or inflammation of the choroid coat of the eye, has been mentioned by a number of authors as occasionally due to

reflex irritation from a decayed tooth, and several cases have been reported. One of the most notable cases is reported by Sous in the *Journal de Médecine de Bordeaux* for 1896. The patient was a girl, aged twenty, who complained of failing vision in the right eye. An examination showed both keratitis punctata and choroiditis. The first right upper molar was carious and had been recently filled, but was still painful. Pressure on this tooth caused an acute pain in the eye. The filling was removed and vision began at once to improve, the keratitis rapidly disappeared, and within a week the choroiditis was gone. The tooth was then refilled, and on the next day there was a return of all the symptoms. The filling was again removed, and the symptoms again rapidly disappeared. Here the irritation of a dental nerve acted in a reflex manner upon the sensory ophthalmic nerves and set up a secretory choroiditis.

Anomalies of the ocular muscles in connection with dental lesions have been repeatedly reported, and the writer of this paper has seen several such cases.

Terrier (*Recueil d'Ophthalmologie*, 1876) has reported a very obstinate case of spasmodic contraction of the motor muscles of an eye and of the orbicularis muscles of the eyelids, which was entirely relieved by extraction of the carious teeth.

Hutchinson (*British Medical Journal*, December, 1895) reports a case of lagophthalmos due to dental irritation. The patient, a lady, suffered from marked spasm of the left upper eyelid. The left second and third molars in both jaws were badly decayed, and there was intense left facial neuralgia in all the branches of the fifth nerve. All four teeth were extracted, and the neuralgia ceased at once, but the spasm of the lids continued. The left first upper molar had an amalgam stopping; this was removed and the pulp found exposed. This tooth was removed, and an improvement in the muscular spasm of the lids began at once, and in six months it was entirely cured.

Ely (*New York Medical Record*, March, 1882) reports a case of a woman, aged forty, who had marked paralysis of the right third nerve or oculomotorius. Several decayed teeth were found in the right upper jaw, and the gums were badly swollen. The teeth were extracted, the alveolar cavities and gums were treated antiseptically, and the symptoms of muscular paralysis all disappeared. The subject of periostitis of the bones of the orbit, as a consequence

of periostitis of the alveolar arch due to decayed teeth, is so intimately connected with orbital cellulitis that the two will be considered together. These constitute some of the most serious cases, not only as regards danger to the integrity of the eye, but also to the life of the patient, whichever fall under the observation of the oculist Hirsch, Péchin, Juler, Schwendt, Pagenstecher, Vossius, Burnett, Snell, Fage, and many others have all reported cases.

Schwendt published an inaugural dissertation on orbital cellulitis in 1882 in which he collected the reports of forty-four cases, of which seven were directly due to carious teeth. The cellulitis was generally preceded by abscess of the antrum, periostitis of the floor of the orbit, and sometimes by suppuration in the ethmoid, with discharge of pus from the nose.

Vossius, in 1884, reported a case of orbital cellulitis with thrombophlebitis of the orbital veins and optic neuritis, with complete restoration of vision after extraction of a carious molar. This case was probably due to a rapid infectious inflammation of the veins and lymphatics with thrombosis, through the alveolar veins into the antrum, and thence by a branch which perforates the floor of the orbit and empties into the infraorbital vein.

Snell, in 1890, reported to the London Ophthalmological Society the case of a young girl, aged fourteen, who had two decayed teeth in the upper jaw, which were extracted and periostitis found in the alveolar arch. Acute orbital cellulitis followed, and the orbital tissue was freely incised, giving exit to a large quantity of pus, but death followed in a few days from meningitis.

Fage (*Receuil d'Ophthalmologie*, 1893) reports the case of a man, aged twenty-nine, who applied for treatment. There was protrusion of the left eye with marked chemosis, œdematous lids, dilated iris, and the cheek swollen and painful. There was fever and a fetid odour to the breath. The gums of the left upper and lower jaws were swollen and there were several carious teeth. The first left upper molar was wanting, having been removed a few days before on account of severe toothache. The symptoms became rapidly worse, and the orbital tissue was freely incised, but no pus appeared. An incision in the lower lid gave exit to fetid pus. A probe passed freely through the alveolar cavity of the first molar into the antrum, and pus flowed from the latter. This treatment, together with antiseptic irrigation, brought about a rapid recovery.

Galezowski reports a somewhat similar case, occurring in a young woman, aged twenty. He comments on the rather marked frequency of alveolar abscess due to carious teeth, he having seen nine cases in two years among seventeen thousand cases of eye-disease.

There seems to be no doubt that in addition to the rather benign reflex disturbances in the eye accompanying more or less serious disease in the teeth and jaws, we also not infrequently meet with grave ocular lesions due to an infectious process, and here our anatomical knowledge enables us to follow the channel of propagation accurately. I think it may be stated that the primary evil starts in the periosteum around a carious alveolus, develops at first slowly, and if recognised and properly treated, it may be cured without an abscess. If, however, the alveolar dental periostitis extends to the antrum, the next step will be an abscess of the antrum, periostitis of its walls, including the root of the antrum or floor of the orbit, which, in its turn, sets up orbital cellulitis, ending in suppuration, with possible destruction of the eyeball from panophthalmitis, or inflammation of the optic nerve and atrophy from strangulation of the nerve by pressure.

The various steps in the destructive process here outlined are well illustrated in the report of a single case, published by Juler in 1895 (*British Medical Journal*, October 19). A boy complained of pain in one of the upper molar teeth, and this toothache was followed by pain in the jaw, then by pain in the orbit, exophthalmos, orbital cellulitis, and suppurative panophthalmitis, and total destruction of the eye. The tooth was extracted, and was found extensively diseased, with caries of the alveolar wall, periostitis, abscess at the root of the tooth communicating with an abscess of the antrum. The eye was enucleated, and the floor of the orbit was found extensively diseased, with a large hole communicating with the cavity of the antrum.

In this somewhat rapid sketch of a subject of almost equal interest to both dentist and oculist, there does not seem to be any reasonable doubt of the close connection which exists between certain diseased processes in the eyes and certain abnormal physiological and pathological conditions of the teeth. The modern ophthalmologist certainly recognises the existence of this connection, though he perhaps has not insisted upon it sufficiently in the published literature.—*International*.

THE DENTAL RECORD.

VOL. XVIII.

AUGUST 1ST, 1898.

No. 8.

Original Communications.

PORCELAIN ENAMEL FOR INLAYS AND PIVOT TEETH.

By M. S. JENKINS, D.D.S., Dresden.

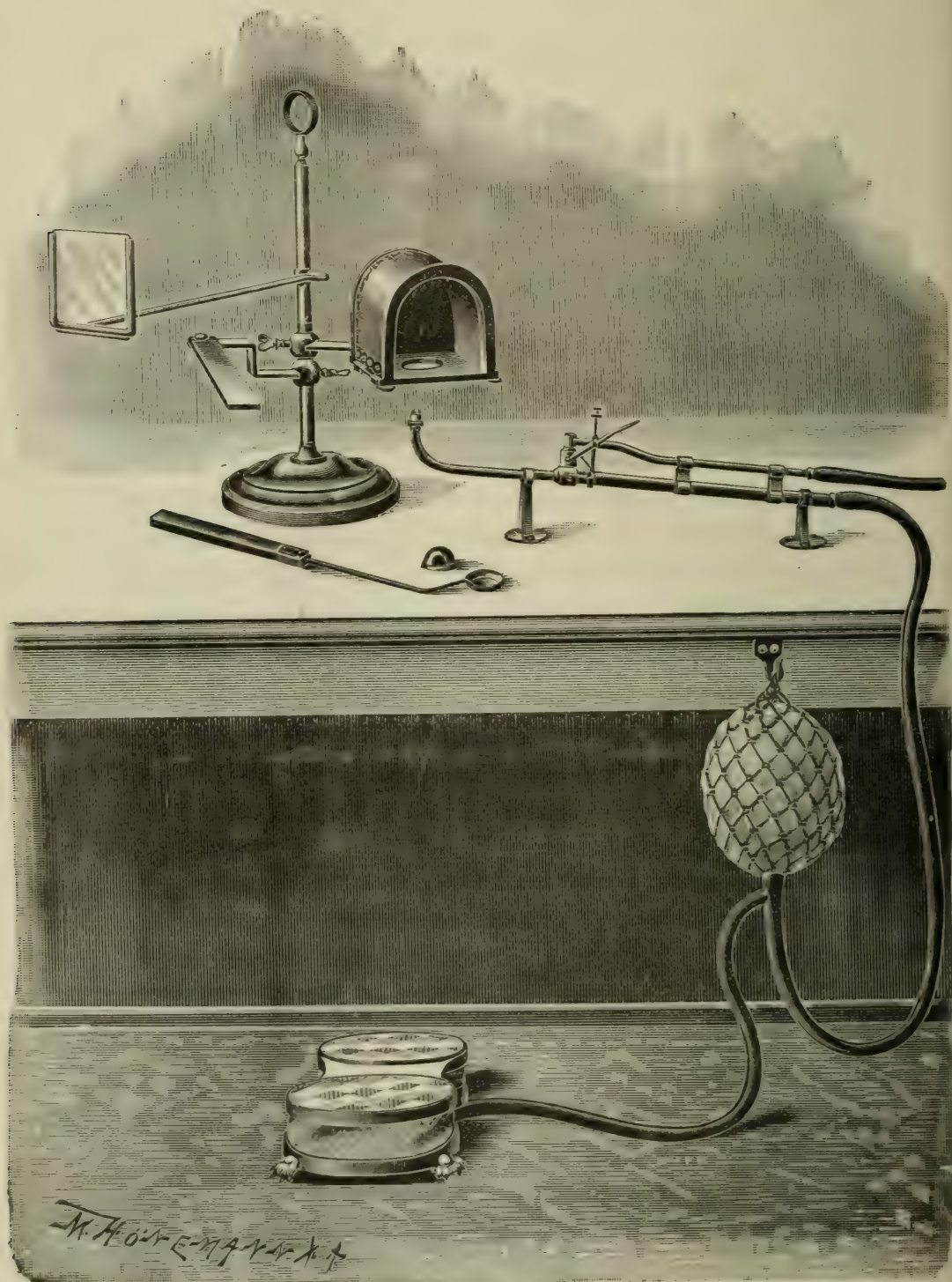
IMMEDIATELY after the first introduction of inlays melted in platinum foil impressions I began to occupy myself with endeavouring to improve the materials then offered for use. Some five years ago I came to the conclusion that an entirely new material must be evolved—one which should possess the qualities of both porcelain and enamel, and which could be melted in a gold foil impression. After a long series of experiments I finally obtained, on May 15th, 1897, the desired body, and on March 24th, 1898, I completed my last indispensable study in colour. Experiments in the laboratory and in the mouth have gone on simultaneously, and for about a year I have had the advantage of the experience of some valued colleagues, who have been employing my method in their practice as I have done in mine.

The result has been completely satisfactory. This new material resists acids, is not stained by sulphides, does not change in colour nor disintegrate in the mouth, and gives edges so perfect that they cannot be detected except by careful examination.

A simple apparatus has been invented for melting this material. It consists of an iron heater, lined with asbestos, open on one side and with a hole in the bottom, a modification of the Melolle blow-pipe, and a Standing's bellows. With this apparatus a steady and perfectly controllable heat can be obtained.

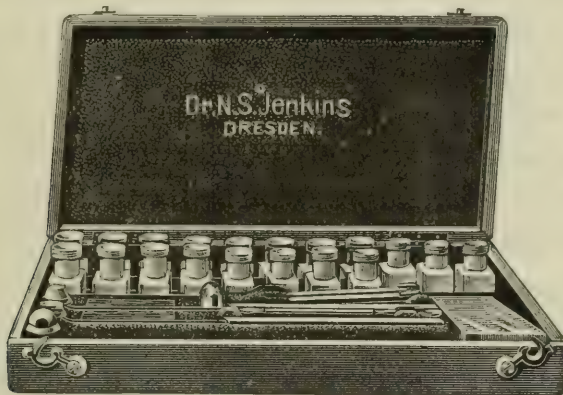
The inlay or pivot tooth is placed upon a bed of powdered asbestos at the bottom of a platinum melting cup, the cover of which has an opening through which every stage of the process of melting can be accurately observed. This a matter of great importance, for it

is necessary to know both for colour and contour just when to suspend melting. For the proper use of this method a high order of skill, intelligence, taste and patience is necessary : skill in



preparing the cavity or root; intelligence to perceive where this system is applicable; taste in selecting the colour and determining

the shape and contour; patience—and much patience—in taking all the steps exactly and not being led into slighting any detail through hurry or confusion. But, if these conditions be fulfilled, operations can be made with mathematical exactness and of ideal beauty. Rough, broken, misshapen, discoloured teeth can be so restored as to leave no visible suggestion of their former condition and made into useful organs as well. Frail walls which could not bear the pressure necessary to pack gold solidly, can be supported and



preserved. Nearly exposed pulps and morbidly sensitive dentine can be perfectly protected from all deleterious external influences so that in a short time the patient forgets that such teeth were ever troublesome. Capped pulps behave with a docility unknown to other methods of filling. Above all, the fearful strain of packing gold in large, sensitive, and complicated cavities is taken away from both patient and operator, and permanent operations of unexampled perfection can be made for invalids and delicate patients who would otherwise be condemned to frequent renewal of temporary fillings.

Last of all, this work readily commands higher fees than the most elaborate gold work, there being no patient so stupid as not to perceive that this is the work of the artist and not of the labourer, and who cannot see the inestimable advantages of the system.

DIRECTIONS FOR MAKING INLAYS.

The Cavity.—Prepare the cavity with clear and well polished edges, avoiding undercuts, and observe beforehand in what way the impression can be most easily removed. In an approximal cavity, be sure to have room enough to work out the impression, and to insert the filling when it is completed. If the impression is taken

without putting on the coffer dam, dry carefully, and, if the gold foil must infringe upon the gum, paint a thin film of vaseline upon the gum, to prevent the foil from sticking. In very complicated cases, after thorough drying, a film of vaseline may sometimes be painted over the entire cavity with advantage.

The Impression.—It should always be taken in gold foil, as Platinum foil is too stiff and too thick for perfect work. Gold foil number 30, whether cohesive or noncohesive is a matter of indifference, is best adapted to most cases. In very large and complicated cavities, number 40 is sometimes preferable. Take a piece of foil of the desired size and shape, and press it first into the deepest part of the cavity with a small piece of cotton or spunk. Continue then to pack other pieces until the foil perfectly fits the cavity and laps over the edges everywhere without irregularities or wrinkles. Sometimes it is necessary to burnish the foil, but often packing is sufficient to give perfect edges. Remove the packing, piece by piece, and examine the gold carefully to make sure that the impression is exact. A slight tear in the foil if not at the edge of the cavity will do no harm, but, after some experience, nearly all impressions can be taken without a break in the gold. In all cavities there will be, or should be, one surface somewhat slanting. Insert a sharp fine pointed hoe into the gold at this surface deep in the cavity, and slightly start the foil from its place. Do this very gently. Usually a touch is enough to slightly loosen the impression. Then coax the gold out by gentle touches. Each case is a law unto itself as to how this can best be done; but, with sufficient care, a perfect impression of every well shaped cavity can certainly be obtained.

Selecting the Colour.—This should be done while the tooth is still wet, since dryness will bleach every tooth, and the colour of the inlay must correspond to the tooth in its normal, moist condition. In approximal cavities in the incisors it is sometimes well to select a colour a trifle lighter than that of the natural teeth, because of the shadows, but in most instances it is better to select the colour to conform to nature so nearly as possible. There are eighteen colours with every outfit, specimens being arranged upon two ivory fans of nine colours each. These have been selected out of a great number of colours, and will give a sufficient variety to answer the purposes of the widest practice, unless it be in abnormal cases. Any desired colour can be furnished upon demand. The specimens on the fans

represent the result of normal melting. Too rapid or excessive melting will lighten, and insufficient melting will darken these colours in a measure ; but, by judicious treatment, they will remain constant to the pattern.

Melting.—Mix the powdered asbestos with water to the desired consistency, and place upon the bottom of the platinum cup for inlays sufficient to imbed the impression. Generally a slight tapping of the cup will settle the impression in place. Should some of the walls, however, be too high, a little of the asbestos should be carried under them with the sharp point of the ivory instrument designed for working the powdered asbestos, so that the impression is equally supported. Place upon the agate plate, which is unpolished for convenience of taking up the powder with the spatula, a small quantity of selected colour, and mix it with absolute alcohol. With the small, thin blade of the spatula take up some of the well-moistened powder and fill up the impression, taking care not to overflow the edges. If, in packing, the powder gets too dry, either in the impression or on the palate, add more absolute alcohol with the drop tube. Avoid dirt and dust. Put the small cover over the melting cup, with the opening toward the handle. Then hold the cup across the hole in the heater, keeping it about in the middle, and turn a very fine flame from the blowpipe, on the handle, about an inch from the melting cup, thus gradually drying the asbestos. Do this without hurry. The moisture must be evaporated, not boiled out. This done, gradually turn the flame upon the bottom of the cup, slowly and gently increasing the flame and the draught from the footbellows, until the porcelain enamel is melted. No violent action of the bellows is necessary. A small flame and a little draught is sufficient in most cases. It is of no consequence if the first melting is rough and irregular. The material is not designed to flow easily. When the powder begins to melt, hold the flame and draught as it is and do not try to accelerate the melting by rapidly increased heat. With care and patience anyone can learn to melt this material so that it forms a solid mass, free from bubbles and constant in colour. The process of melting can be clearly seen through the opening of the platinum cover, and if the glow is trying to the eyes they can be protected by the tinted glass screen on the adjustable arm. The first melting will not be sufficient, as the powder greatly contracts, but the cover can be at once removed and cooling facilitated by

wetting the bottom of the cup with water, as the material is not liable to crack. Then pack the impression with powder, as before. Keep wetting it with alcohol if it dries too quickly. It does no harm if the asbestos becomes moistened with alcohol, but avoid wetting it with water for a second time. Turn a small flame as at first, on the handle, and presently a blue flame will appear at the opening of the cover. Let it burn until the alcohol is quite consumed, and then melt as before. Generally a third packing and melting is necessary for exactness of edges and contours. Examine the inlay with a magnifying glass to be sure if the edges are exact, both in packing and after melting. The tendency, in the beginning, is to contour over much, but after some experience one learns to get exactly the form and fulness desired. When perfectly melted the inlay can be ground, and then polished with an Arkansas stone, but it is better to have it so exact in shape as to retain the polish given by melting. After the final melting it is best to let it cool somewhat slowly.

Removing the Gold Foil.—When the inlay is cool, remove it from its asbestos bed and wet it with water. Then, with the tweezers, gently bend back the foil from the edges, by slow degrees, and it will usually strip off in one piece. If any shreds of gold remain remove them with a fine excavator.

Setting the Inlay.—The filling should now fit the cavity perfectly, and not rock nor move when in place. The edges should be absolutely exact, so as not to be perceptible to the naked eye. Make sure that the acclusion is correct, and then, keeping both inlay and disc thoroughly wet, cut grooves, with a small diamond disc, in the most favourable positions on the inside of the filling. If dove-tailed grooves so much the better. The smallest corundum discs are too large and soft for accurate grooving, except in very large fillings. Now dry the cavity perfectly, and with a small bur or excavator cut out a little dentine from the cavity, so as to gain space for a little cement nearly everywhere, except at the edge.

Be sure to understand the character of the phosphate cement used. Almost any good phosphate will answer, but the operator must be familiar with its working. It is important to mix the cement to that consistency which will allow every atom of surplus to be squeezed out, and yet be hard enough to hold the inlay firmly in place.

Inlay and cavity being perfectly dry, a little cement should be smeared into every part of the cavity, as well as upon the bottom and sides of the inlay, especially in the grooves, and a few seconds allowed for the cement to attach itself, when the inlay should be carried into place and gently pressed home. The surplus should be neatly removed from tooth and inlay, and care be taken that the filling is exactly in place, when the final pressure should be given with a bit of wood, by means of which a gentle elastic pressure is exerted until it is evident that the last remnant of the cement has oozed out. In approximal cavities a piece of tape or silk, or sometimes a piece of floss silk, may be used in pressing the filling into place; but, after removing all the surplus, it will be most frequently found that the even pressure of a piece of wedge-shaped wood, applied exactly and firmly to the centre of the filling, will bring it still more perfectly in position. It is well to leave the coffer dam in place until the cement has begun to crystallize, but, in cases when the dam is inapplicable, varnish should be painted over the inlay and thoroughly dried with hot air.

At a subsequent sitting, any particles of phosphate which may have been still clinging to the tooth or inlay can be removed, when it will be found that the tooth is perfectly restored in appearance and usefulness.

Pivot Teeth and Crowns.—A special melting cup is furnished for pivot teeth. The root to be pivoted should be prepared, in the usual way, with a platinum pivot and platinum or pure gold cap and collar, or half collar, according to the case. The pivot should extend through the cap, far enough to be embraced by the pins of the tooth. It should be flattened, so the pins can be bent over the pivot to advantage, when the tooth has been ground and fitted. The spiral in the melting cup should be covered with the asbestos paste, and the pivot set in the spiral. The selected powder can then be placed upon the tooth and cap, and melted under the same conditions as in inlay work, except that more care must be taken in cooling, as the tooth is more liable to crack than the porcelain enamel. In case of a close bite, the pins, and the greater portion of the pivot, can be ground away with the surplus porcelain enamel until a perfect acclusion is obtained, and then, if desired, the whole can be melted again. By this method the colour of the tooth is perfectly preserved, and a far stronger tooth can be obtained than is possible through backing with gold in soldering.

The gum colour is not to be painted on, as in other work, but laid on in a thin mass, and then melted over the visible portion of the band. In cases of short teeth, when the root is banded, the colour of the tooth, instead of gum colour, may be carried over the band. Long, single teeth, which are designed to be set on a plate with vulcanite, may sometimes be tipped with this gum colour to great advantage. Any ingenious dentist will discover many ways by means of which this material can be utilized in crown work, and it is offered to the profession in full assurance that its value will be apparent from the first, and that through experience, it will be found indispensable both to practitioner and patient.

GAS AND ETHER.*

By WILLIAM GUY, F.R.C.S., L.R.C.P., L.D.S. Edin.

Dental Surgeon to the Royal Infirmary, Edinburgh.

THE subject of general anæsthesia is one which necessarily has for us a vital and personal interest. We are most of us in the daily habit of administering, or operating under, an anæsthetic, and it frequently happens that the choice of an anæsthetic by patient, or administrator, or both, is determined by the preference indicated by the operator. With regard to the extraction of single teeth, or of as many as the operator judges he can remove during a period of not more than 40 seconds, we shall find absolute unanimity—one and all of us will declare for gas alone or in combination with oxygen. But when the operation is one which certainly cannot be accomplished in the short time afforded by gas, the dentist becomes an object lesson in the influence of environment on the individual. The Caledonian, with whom familiarity has bred contempt of danger, will elect light-heartedly for chloroform; the Southron, with the fear of coroner's inquest before his eyes, will as certainly choose ether, or gas and ether. I have at the present time no desire to raise a discussion on the relative merits or demerits of these re-agents; but in recounting the considerations which weighed with me personally and induced me to cast my vote in favour of gas and ether as combining the maximum of safety to the patient with a

*Read before a Meeting of the Odonto-Chirurgical Society of Scotland at Edinburgh, March 18th, 1898.

sufficiently long period of available anæsthesia, I must perforce refer to a few facts and figures bearing on this most important and thorny question. Sir B. W. Richardson, after prolonged and laborious investigation, tabulated the fatalities thus :—

Chloroform	-	1	death in 2,500 administrations.
Ether	-	1	„ „ 23,000 „ „
Nitrous Oxide	-	1	„ „ 75,000 „ „

These figures have been generally accepted, although, in the light of later statistics, it would seem that the death-rate given for chloroform and nitrous oxide is rather too high, and for ether rather too low.

But all the figures hitherto put before us undoubtedly show that chloroform is at least five times as dangerous as ether; while the risk with nitrous oxide, in experienced hands, is infinitesimal. Furthermore the death roll of chloroform is an annually increasing one. In 1894 there were reported in the United Kingdom 47 deaths from chloroform, two from ether, one from gas. In this week's issue of the *British Medical Journal*, Dr. Robert Bell, of Glasgow, reports 96 deaths, under anæsthetics, of persons in England alone, on whom inquests were held. His cases are, indeed, collected from reports in daily papers of inquests held, and he considers that they represent but a fraction of the deaths that actually occur. He quotes Professor Augustus Waller as saying :—"A large proportion of the cases of death, undoubtedly caused by chloroform, are never published; how large a proportion it is impossible to say, yet almost certainly the largest proportion of the total number of deaths. At one hospital, from which two deaths from chloroform were reported during one year, nine deaths actually occurred." Of Dr. Bell's 96 deaths, 88 were from chloroform.

In the *Lancet* clinical report on the Hyderabad commissions on chloroform, 596 deaths from chloroform are tabulated with great care and skill. These tables bring us face to face with the appalling fact that the so-called minor operation of tooth extraction was in progress, or had been performed, in no less than 56 of these fatal cases, a number which greatly exceeds that recorded in connection with any other operation, capital or minor, and raises tooth extraction to a bad pre-eminence as the most dangerous operation that can be essayed under chloroform. Consideration of facts such

as these cannot but make the dentist perceive the enormous responsibility he incurs when he adopts, or recommends, chloroform in tooth extraction. There is a passage in Richardson's "*Vita Medica*" which brings this home to one with sledge-hammer force. He says :—

"No man living can be in a more deplorable condition than the man who, talking for the moment to a patient in a friendly and, possibly, assuring way, applies something to the mouth or nose, which the patient breathes, and is silent for ever. A dear old friend of mine, by occupation a dentist—an accomplished man, and a very feeling man, occupying a very good position—one morning experienced the sad fate noticed. A lady drove up to his house to have a tooth extracted ; she, full of grace and of beauty, sat down to breathe chloroform, and died before the tooth was touched. The poor dentist could not believe the sight that was before him, and he never got over it ; it was ever on his tongue and on his heart, and he became an old man in an hour."

Furthermore, as the deaths from chloroform have increased in number so rapidly since Snow's day, it seems a reasonable deduction that there has been no improvement in methods of administration or in the general standard of skill displayed by administrators. In connection with this last point, an eminent surgeon remarked to me a few days ago on the comparative rarity of skilled anæsthetists, and pointed out as the probable explanation that, whereas a man would need to give chloroform at least 50 or 60 times under supervision before he could be considered competent, not more than two or three clinical clerks in any given ward could obtain that experience in the course of a session.

Early training and a somewhat extended and fortunate experience in the use of chloroform naturally enough tended to predispose me in its favour, but I pondered all these things diligently, and I could see no escape from the logical conclusion that in tooth extraction it was the most dangerous of anæsthetics. As it appeared likely that I should have some 800 operations under anæsthetics to perform yearly at the Royal Infirmary—of which at least 200 would require an anæsthesia longer than I could obtain with gas, I determined, at the beginning of 1896, to cease the use of chloroform in my department, and to substitute for it gas and ether. I have since then recorded in the Hospital Register 410 cases in which the

combination has been used, and I propose very briefly to recount the method of administration adopted, the results obtained, and the conclusions I draw therefrom.

I use a Clover's Ether Chamber, interposed between the face-piece and the gas bag. I began with the face-piece in which I unshipped the inspiratory valve and allowed the patient to expire the first half-dozen breaths of gas through the expiratory valve. I then closed the expiratory valve with my finger, and turned on the ether gradually to three on the indicator, so giving a mixture of gas and ether, which the patient breathed backwards and forwards into the bag.

But I had for some time, in giving gas alone, been allowing the patient to breathe it backwards and forwards during the whole administration, and found the resulting anæsthesia to be a very satisfactory one, and unattended by any of the drawbacks usually attributed to that procedure. There was, to be sure, the hygienic objection to allowing a series of patients to breathe from the same bag, but this I endeavoured to overcome, and, I believe, not unsuccessfully, by cleansing the apparatus frequently with carbolic solution—in fact, keeping the whole apparatus pretty well doused, as to its interior, with that most valuable of antiseptics. I therefore dispensed with valves altogether, and allowed re-breathing from the first. I thus diminished the risk of oxygen starvation, for more oxygen is allowed in this manner to remain in the lungs during the inhalation than when the residual air is washed out and escapes through the expiratory valve with the earlier expirations. The mixture required a slightly longer period to produce full anæsthesia; but lividity was less marked, being seldom present to the extent of more than a slight dusiness, and a longer anæsthesia resulted. I now allow the patient to breathe the gas alone for eight breaths or so, and then turn on the ether reservoir, and continue the inhalation for a period which varies with individuals, but hardly ever exceeds two minutes—70 seconds representing a fair average duration. This, I find, gives me 60 to 70 seconds available for operation; but occasionally the patient remains under much longer, and I have obtained 130 seconds. When I desire a longer period than usual, the face-piece is removed, and an inspiration of air allowed about the middle of the administration. It is, however, essential that the face-piece should be properly adjusted and fit closely to the

face, as the continuous inward leakage of air is apt to cause excitement, and impedes the production of the anæsthetic condition.

The records show an average of eight teeth, or roots, removed for each administration ; but it must be remembered that it was not unfrequently given in cases where, though only one or two teeth required extraction, they seemed likely to present difficulties. On the other hand, I have often had time to take out upwards of 20, and in one case 27.

Abolition of the conjunctival reflex and dilatation of the pupil were practically constant phenomena. "Trade movements" are by no means rare. Women who worked sewing machines performed the appropriate movements, a sailor from Shetland attempted to row the chair away, a cobbler cobbled, while a surgeon commenced to lecture, with characteristic explanatory gesture. These demonstrations occurred in the early stage of the anæsthesia.

The ether, in a few cases, produced a copious secretion of saliva, but no secretion of mucus sufficient to embarrass respiration was observed. One girl was sick as soon as the face-piece was applied (she had just taken a basin of broth) ; but the same girl returned another day, and had no nausea.

As self-control is little, if at all, practised among the class which furnishes most of the patients to the Infirmary Dental Department, it was not surprising to note occasional manifestations of hysteria on recovery among the female patients, and of the possession of a copious vocabulary of the blasphemous and obscene among the males ; like manifestations would doubtless attend any disturbance of the tenor of existence in these individuals.

Two cases of mobile jaw were met with ; in one of these dislocation was produced by the insertion of the gag. Patients suffering from a great variety of disease, medical and surgical, took the mixture without observable ill effect. But with one class of patients I have to confess to absolute and complete failure. I refer to the females from the Lock Wards, who resisted the administration, held their breath, were violent and obstreperous, and if they did so far succumb to the influence of the anæsthetic, generally developed tonic muscular spasm, and altogether proved themselves most unsuitable subjects. I am driven to the conclusion that they constitute a class in whom chloroform is indicated.

Patients with pulmonary phthisis took the mixture well, but I never gave it to any patient with bronchitis. Involuntary micturition was noticed in five patients, all females. All five were seen during the cold weather, and were besides, I think, partly attributable to the patients having come long distances, and waited two or three hours in the waiting rooms, where no facilities are afforded for evacuation of a distended bladder.

For instruments I mainly depended on the upper root forceps and lower hawks-bill root forceps, made by Ash & Co., Nos. 30 and 74 in their catalogue of forceps, rather stouter than usual (in these forceps, when closed, the beaks should meet) ; and on the pair of elevators I show you. I used Hewett's gags, aluminium with indiarubber covers.

I am convinced that the substitution of gas and ether for chloroform in dental hospital practice would make for much increase of dexterity in extraction, and this conviction has received ample confirmation in my observation of some of the senior dental students who have attended my department.

I further conclude that chloroform is unnecessary in more than two per cent. of cases of tooth extraction requiring a general anæsthetic; of the remainder 28 per cent. are suitable for gas and ether, and 70 per cent. for gas alone.

I believe that the operation of "clearing a bad mouth" under chloroform is often attended with after results of a serious or even disastrous nature. I believe it would be very much better for the majority of patients if such operations, instead of being performed at one sitting under chloroform, were done at two sittings, separated by an interval of a week or a fortnight, under gas and ether.

I am satisfied that gas and ether is infinitely more suitable for hospital practice than chloroform, and I am convinced that no practitioner who has given a fair trial to gas and ether will ever return to the indiscriminate use of chloroform.

I desire to thank my friend, Dr. Charles Page, for the valuable assistance he has rendered me during the time over which the present notes extend, both as operator and as anæsthetist, and also for the care with which he kept the records of cases.

A NEW PORCELAIN INLAY FOR APPROXIMAL CAVITIES.

By LOUIS JEFFERY, L.D.S.Eng.

EVERYONE is agreed as to the æsthetic advantages porcelain possesses as a filling material over gold and plastics ; indeed, if care be taken in matching the shade well, the inlay is next to invisible, and is infinitely to be preferred to any other material.

It unfortunately happens, however, that the cavities which are most easy to fill with porcelain are not those that most commonly present themselves for treatment. One large class in particular, that of approximal cavities between front teeth, is exceedingly difficult to fill ; and to this class the method I have devised is peculiarly applicable.

It consists in preparing together two contiguous cavities, and shaping them with a long tapered bur, and then inserting a double inlay of identical taper.

The steps in the operation are as follows :—The teeth are first separated as for gold filling, in order to allow of the use of discs for finishing ; the carious dentine is then removed, after which the double cavity is roughly made circular with rose head burs, leaving the inner opening slightly smaller than the outer. (Fig. 1.) The

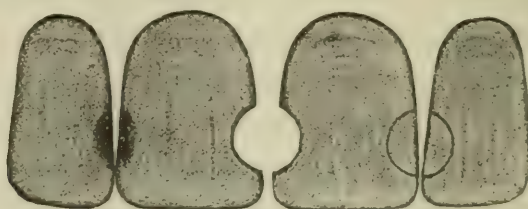


FIG. 1.

*

**The circle line is accentuated purposely to show the inlay, but would not be apparent in the tooth.*

special bur (Fig. 2) is then taken and with a light touch and go

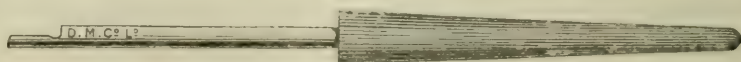


FIG. 2.—Special Bur.

motion, the cavity is made absolutely true, so that if one of the tapered inlay rods be inserted, it will be found to be in close contact with all edges.

Place the rod (Fig. 3) so as to bring the connecting cement

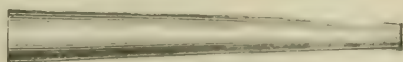


FIG. 3.—Rod.



Section of Rod.

between the teeth, and mark the posterior edge of cavity on the rod with a finely pointed pencil, then remove the rod and cut off the surplus with a diamond disc.

Shape this end to be flush with teeth behind, and polish with fine grained stones ; at this point it is well to finish also the interstitial cervical edges, as these are difficult of access when inlay is fixed.

Place in position again and mark the front where the inlay leaves the teeth, and cut a deep notch round here with the diamond disc, so as to ensure the rod breaking off afterwards without splintering. See that the cavities in the teeth are so shaped as to afford good anchorage to the cement, and in each inlay cut a large dovetailed slot ; these slots are of course in that side of inlay which lies against the teeth, and are to afford additional holdfast to the cement, which should be one that will bear being mixed very soft to ensure the superfluous finding its way out. The surplus rod in front, which up to the present has been of service in handling the inlays, may now be broken off and the cement allowed to harden thoroughly, if possible postponing the final finishing till the next day. Pass a hot spatula between the inlays to remove the connecting cement and finish with fine stones and discs.

In cases where decay has run up under the gum, or where a slot has had to be cut at the back of tooth to allow of treatment of nerve canal, these extensions of main cavity are first to be filled with gold or amalgam, and the main cavity filled as usual.

It will be found advisable in preparing cavity, to follow the line of decay, which in some cases runs in a slightly downward direction, and in others more in one tooth than its neighbour ; a slight deviation, however, in any direction is not of moment.

The success of the operation depends of course upon the inlays corresponding exactly with the bur in taper, and to ensure this being the case, the Dental Manufacturing Company have undertaken to supply both burs and inlay rods of identical taper.

DEATH FROM PYÆMIA FOLLOWING ATTEMPT AT TOOTH EXTRACTION.

WE have received the following notes of an extremely interesting case :—A chemist's assistant, 18 years of age, endeavoured to extract some roots of a left upper molar by means of a sharpened wooden pen-

holder. After these attempts at amateur tooth extraction he suffered severe pain in the neighbourhood of the roots and some swelling, which progressively increased in size, involving the cheek adjacent to it. Three days later a blackish slough commenced to form and the patient applied for treatment to the Dental Hospital of London, where he was ordered a mouth wash. Two days later, April 27th, he again went to the hospital, and, when seen by the surgeon of the day, was found to have a blackish slough, separated by a distinct line of demarcation from the surrounding tissues, which were much inflamed. The slough occupied the region of the upper left molar teeth and extended inwards into the palate, involving it to an area of about the size of a shilling. The temperature was 102·6.; pulse rate 120; the tongue was foul and the patient looked ill. The patient was sent to Charing Cross Hospital, where he was at once admitted, and having been anæsthetised the slough was freely scraped away and the tissues cauterised with pure carbolic. In spite of this treatment another slough formed, the adjacent teeth became loose, and the bone was stripped and laid bare by burrowing pus, which could be freely squeezed out. The patient was again anæsthetised and the parts were again freely scraped. Owing to great respiratory embarrassment during the anæsthesia tracheotomy was performed. The edges of this wound also showed signs of sloughing, and gradually the patient sank, and on May 16th he died.—The postmortem examination showed multiple visceral abscesses, etc.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Annual Meeting was held on June 6th, 1898. Mr. W. E. HARDING (President), in the chair.

The Minutes of the last meeting were read and confirmed. Mr. F. H. M. Vanderpant signed the Obligation Book and was admitted to membership.

The following Officers and Councillors for the ensuing year were ballotted for and unanimously elected :—

PRESIDENT—Mr. John Fairbank. VICE-PRESIDENTS—Messrs. John Ackery, C. West and W. A. Maggs (resident); Messrs. Malcolm Macgregor, Edinburgh; W. A. Hunt, Yeovil and J. H.

Whatford, Eastbourne (non-resident). TREASURER—Mr. W. H. Woodruff. LIBRARIAN—Mr. H. Baldwin. CURATOR—Mr. Storer Bennett. EDITOR OF TRANSACTIONS—Mr. J. F. Colyer. HON. SECRETARIES—J. H. Mummery (foreign), J. O. Butcher (Council) and H. Lloyd-Williams (Society).

COUNCILLORS—Messrs. H. L. Albert, H. J. Kluht, A. E. C. Woodhouse, J. H. Badcock, G. W. Bateman, C. F. Rilot, L. Matheson, E. Lloyd-Williams and W. J. England (resident); Messrs. E. N. Washbourne, J. S. Amooore, W. R. Acland, A. A. Matthews, Morgan Hughes, J. A. Fothergill, Walter Harrison, Alexander Kirby and Henry Martin (non-resident).

The LIBRARIAN (Mr. W. A. Maggs) announced that "Mechanical Practice in Dentistry," by Mr. W. Booth Pearsall, had been presented to the Society, as also "The Transactions of the American Dental Association, 1898," and "The Transactions of the Odontological Society of Great Britain," No. 2, Volume 25 and No. 3, Volume 26. He then presented his annual report, in the course of which he stated that 38 members and eight visitors had made use of the library during the past year, as compared with 43 and 15 respectively for the preceding year. The number of books borrowed—a privilege now enjoyed by members only—during the year was 60, as compared with 57 for the preceding year. Many donations and additions to the library had been made, as were announced at the monthly meetings. The exchange list of the transactions of the society had been slightly increased. The library had been open for the convenience of members and visitors on Mondays and Fridays from 6.45 p.m. to 8.45 p.m., as had been the rule for some time past, and the sub-librarian had been in constant attendance upon those evenings. He concluded his report by expressing a hope that the library, which contained one of the best collections of dental works and current literature in the world, would be more used for reference purposes and for the loan of books; and he reminded the members that a recommendation book for new works was always at their disposal.

The TREASURER (Mr. Woodruff) presented his report and balance-sheet for the year ending October 31st, 1897, showing total receipts £682 8s. 9d. against expenses £478 14s. 8d.; investments and cash at bank £4,458 17s. 5d. After a short discussion, taken part in by Mr. D. Hepburn, Mr. F. Canton, Mr. W. A. Maggs and

the Treasurer on the subject of fire insurance, on the motion of Mr. F. J. Bennett, seconded by Mr. Betts, the accounts were adopted.

The CURATOR (Mr. Storer Bennett) said the President had been good enough that night to present to the society a number of old pieces of mechanical work which, year by year, were becoming scarcer, and as museum specimens and objects to be studied were exceedingly valuable. Such specimens showed stages in the evolution of the manufacture of mineral teeth which were interesting to those who were trying to make a history of the development of the art of dental mechanics. Mr. Morton Smale had sent a model taken from a patient who, at the age of 16, had two supernumerary right lower molars extracted. The position of the teeth was interesting, as was also the fact that they did not erupt until after extraction. The model gave support to the accepted view that teeth germs arose *de novo* from the epiblastic laminæ. A case came to the hospital about four years ago where a woman had such a tooth behind the second bicuspid on the right side, close up against the back of the second bicuspid, and on the left side immediately in front of the second molar. There was no first molar present on either side, but just one of the little stunted teeth, probably a supernumerary tooth, close up against the bicuspid. Mr. Bennett mentioned that he was also fortunate enough to secure for the museum a specimen that was intended to gravitate to another one. He thought it would be far more valuable in the possession of the Odontological Society than it would be elsewhere, and therefore he induced the gentleman who owned it to make them a present of it, and their thanks were due to him for his generosity. It was a specimen presented by Mr. Apperley, one of the house surgeons of the Dental Hospital, of a second right upper molar with a second bicuspid lying horizontally with its roots between the roots of the second molar, the crown directed forward, and lying in contact with the root of the first bicuspid. Specimens of molars and bicuspids united by a false gemination had often been seen, but he had never seen a specimen united in that way.

Mr. BENNETT also presented his annual report. He had placed on the table all the specimens presented during the year, and in addition showed some specimens of malformed and damaged tusks that were exceedingly interesting to those who were studying the subject of inflammation of the dental pulp. He urged any member

of the society who came across such specimens, either in the hands of ivory dealers or others, to acquire them for the society, and he was quite sure the society would be willing to purchase them for any moderate sum. They were exceedingly valuable in adding to the series of comparative dental pathology. The museum now contained a series of specimens which no other museum in the world possessed, and year by year that series was growing. The members had a number of friends who were sportsmen, and who, from time to time, came across cases of hares and rabbits that had suffered damage from unskillful shooting or from traps, and he urged members to keep their eyes open to acquire such specimens, which were always interesting and valuable. He also urged that they should interest any sportsmen going abroad to obtain specimens from the various countries they visited. The actual number of specimens presented during the year was 25; but though small in number, they were very valuable. With regard to attendance, he was afraid the members did not take much interest in the museum, for, during the 12 months, only seven members had signed their names. However, it was not an extravagant and futile work keeping the museum open, because of visitors there had been 77, and that was a very large growth on any previous attendance in bygone years.

Mr. BRUNTON asked Mr. Bennett if he possessed in the museum any specimens of Japanese dental work. He had one at home which he should be very glad to present to the society.

The CURATOR said they had one specimen made of wood, as Mr. Brunton informed him was the usual way, but at the same time, as such specimens were rare and very interesting, he should be delighted to welcome the second specimen to the collection.

The following alterations in the Bye-laws were discussed and unanimously agreed to :—

Bye-law XXXII. to read—"The President and Secretary and two members of the society, chosen by ballot, or nominated by the President at the annual meeting of the society, shall audit the accounts of the Treasurer to the end of the financial year."

Bye-law XXXIII. to read—"They shall make a written report to the society, not later than the January meeting following, regarding the state of the funds, and shall answer any questions relating thereto that may be put by the meeting."

Mr. W. R. HUMBY read a communication on "Amalgam." After commending the liberal spirit in which Mr. Black had placed at the service of the profession the accumulation of 40 years' work, Mr. Humby expressed the opinion that the only satisfactory plan of supplying the needs of the profession with regard to stoppings was by united action and a fully equipped laboratory. Putting the question "is amalgam necessary?" he thought it was, in the absence of an insoluble cement. If an amalgam in hardening underwent no serious change of form, and retained a desirable colour, they would be able to avoid the excessively tiresome operation of gold fillings, which could not be said to resemble the tooth, and were only used because the yellow of the gold was nearer to the more or less yellow tone of the tooth than were the greys or blacks associated with amalgams. Nineteen-twentieths, Mr. Humby said, of the fillings inserted were plastics, either cement alone, or amalgam alone, or the two combined. The first, for its solubility, was clearly useless for permanent work. The second were objectionable; some stained the tooth, all conducted heat and lacked adhesive attachment to the tooth substance. Amalgam by itself was being discarded in favour of cement linings with insoluble, unwearable amalgams as external coverings. When cement was first used as a lining, it seemed to control the amalgam plug, preventing the alterations in shape; but in some of the larger plugs this was not the case. The appearance of Mr. Black's papers induced Mr. Humby to test some of the results. He described in detail his method of melting, annealing, and testing; and gave a table of results. There still remained many matters which he had purposely omitted in order to keep the communication within reasonable limits, but he would mention, first, the need, especially in large cavities, of keeping the tooth wet during the shaping of the cavity, and only drying the surface just prior to the insertion of the filling. Secondly, as to colour. This he could not certify to, as there was only one reliable test, and that was in the mouth after an extended trial in practice. He was working to obtain a reliable white alloy, and felt some hope at last of securing one.

Mr. KENNETH W. GOADBY then read a paper entitled "Further Notes on the Bacteriology of the Mouth."

There was no region of the body more exposed to the advent of micro-organisms, unguarded from their entrance and adapted to

their growth, than the mouth ; in fact, at one time or another most known organisms might be found therein. The bacteria of virulent disease had frequently been observed even in perfectly healthy individuals, to be present in the oral cavity, organisms which, if transmitted to a susceptible person, would undoubtedly produce serious, nay, perhaps fatal results. The perception and appreciation of these facts was of the most vital interest to all who practised dental surgery. The most superficial and casual observer was at once struck by the fact that all mouths contain bacteria, although the numbers and species vary within wide limits and bear a distinct relation to the environment of the subject. Notwithstanding the enormous variety of organisms that might occur in the mouth, there appeared to be a distinct flora, flourishing most in uncleanly conditions and decreasing to but a few species in normal healthy mouths. In every case examined he had been able to isolate a streptococcus, identical with the one described in a former paper. Series of experiments had conclusively proved that the diplococci normally occurring in the mouth grew out into the streptococcus brevis when cultivated. The favourite site for bacterial growth was along the gum margin between the teeth. In patients suffering from gingivitis marginalis or from pyorrhœa alveolaris, enormous quantities of bacteria were to be found in this region, in fact, the white deposit was simply a teeming mass of bacteria, many of them being acid producers. The same condition, but in a lesser degree, occurred wherever tartar was present upon the teeth in any quantity, and where occurring locally, as on one or more upper molars, there a corresponding increase of organisms took place, even in an otherwise healthy mouth. In all healthy mouths he had examined (50 in all) two organisms or types of organisms were found, viz., vibrios (spirilla and commas), and huge thick jointed threads, whilst besides these, short motile bacilli were always to be met with. Chromogenic bacteria of many species are often to be found in the mouth, and invariably under diseased conditions of that cavity. Among well-known organisms producing pigmentation, he had frequently found a variety producing a beautiful colour, viz., *B. fluorescens non liquefaciens (motilis)*, an organism commonly found in water, and others had noted this organism. In all the mouths from which he obtained this chromogenic organism the tartar was stained a greenish colour, whilst in two of the cases distinct green staining on the

front upper teeth was present. Miller's assertion that "green staining cannot be accounted for by an organism which only colours the medium, and is itself colourless" was by no means in keeping with observed facts, especially when they considered the case of "blue pus" coloured by the *B. pyocyaneus*. Staphylococci were another variety of organisms constantly to be met with in unclean mouths, and of these the most common is the *albus*. Yeasts were almost always present, and he had several times obtained the *rosa hefa*, giving a fine rose colouration. A short motile bacillus producing a fine red colour had been obtained from five mouths. Among the special mouth organisms none had attracted so much attention as those thread-like and filamentous forms unhappily grouped under the term "*leptothrix*" by Robin, Hallier, Vignal and many others, for no special reason apparently other than that they exist in the mouth in thread-like forms. Miller, who was the first to recognise the inadequacy of the term *leptothrix* as applied to any thread-forming organism, and being unable to cultivate them upon artificial media, provisionally divided the filamentous forms of the mouth into three species, morphologically and according to their reaction with acidulated iodine, viz.—(a) *Leptothrix innominata*; (b) *Bacillus maximus buccalis*; (c) *Leptothrix buccalis maxima*. But Mr. Goadby held *leptothrix* was a term that should be used to express a species and not a morphological form. In Baumgarten's classification a *leptothrix* was described thus:—"Spherical, rod shaped, or filamentous forms, the last showing a difference between the two extremities; spore formation not known. Cocci, like reproductive bodies, are formed by segmentation of the rod-shaped elements." In making cultures he had succeeded in isolating an organism which appeared to be the "*leptothrix buccalis maxima*" of Miller, if they were guided by the iodine reaction; but as the organism to be described was not a *leptothrix*, in Baumgarten's sense of the term, the author had decided to reserve the term "*bacillus maximus buccalis*" for this organism, a more decided bacillus, and which if labelled as a *leptothrix*, would only complicate the confusion extant in the nomenclature of mouth bacteria. In summing up, the author said the filamentous forms occurring in the mouth were by no means therefore *leptothracæ*, and one of them at any rate had been conclusively proved to be a bacillus capable of spore formation and thread production, whilst other bacilli also produced thread-like

forms. The *B. maximus* was also an organism whose relation to dental caries was important, both from its power to produce acid and the ease with which it liquified gelatin. *Spirillum sputugenum* and *spirochæte dentium* were to be found in inflamed conditions of the gums and especially in *pyorrhœa alveolaris*, these organisms being forms of one variety, whose cultures differed from other known spirilla, whilst the difficulty of obtaining pure cultivations was due to the reluctance with which the organisms took on a saprophytic existence, as well as the restraining influence of other organisms. Finally, that both organisms, though they might exist in healthy mouths, were present in most profusion wherever inflammatory and pathological conditions were found.

Dr. WASHBOURN said at the time of the previous paper on this subject two years ago by Mr. Goadby and himself, they were unable to cultivate either the leptothrix forms or the spirilla ; and they thought that they were dealing with anaerobic bacteria ; but Mr. Goadby had since worked the question out very carefully and found that this was not the case. By careful cultivation Mr. Goadby had been able to isolate the spirilla and one of the leptothrix forms. One of the most interesting points which Mr. Goadby had brought forward was that the spirilla could be cultivated on the ordinary laboratory medium, but that they required some time to get accustomed to their new surroundings. This, no doubt, was the reason why others had generally failed to cultivate spirilla from the mouth even when they were present in large quantities. The spirilla were a very interesting series of organisms, more especially because they presented themselves under so many different morphological conditions. That had been well shown in the case of the cholera vibrio. This vibrio, which usually occurred either as a comma or a spirillum, might, under certain circumstances, exist as a quite straight rod. On the other hand, it often underwent degenerative changes and produced peculiar spherical bodies similar to those described by Mr. Goadby in his paper. Great interest attached to the question of the connection between the mouth spirilla and the condition which was called *pyorrhœa*. He could not help thinking that the spirilla must bear some very distinct relation to the causation of that disease. If that were so, it seemed to him to be important for Mr. Goadby to continue his researches and to test the pathogenic effects of the spirilla on animals ; because by such

investigations he might possibly obtain a serum of value in the treatment of disease. Mr. Goadby had spent an enormous amount of time and trouble on his observations, and had tried a large number of methods, and he seemed to have definitely succeeded in cultivating both the filamentous organisms and the spirilla from every case in which he had been able to demonstrate their presence by microscopical examination.

Mr. F. J. BENNETT congratulated Mr. Goadby upon his hard work and upon the success which he appeared to have obtained. He hoped Mr. Goadby would proceed further with the matter and eventually be the proud discoverer of the true nature of the pyorrhœa alveolaris.

The PRESIDENT endorsed the opinion expressed by Mr. Bennett, and regretted that time did not permit of any further discussion upon Mr. Goadby's very valuable paper. He then said : Nothing remains now, gentlemen, but for me to deliver to you a few remarks upon leaving this chair. My year of office having expired, the time has arrived when I must vacate the chair for my successor. I do not propose to deliver a formal valedictory address, which must necessarily partake of a retrospect of the papers and discussions of the past year, both of which are, doubtless, quite fresh in the memory of all of you. But before I leave this chair I should like again to express my appreciation of the honour you have done me in placing me in the position of President of this Society, and to thank you for attending so constantly at the meetings. I would also congratulate you on the selection of President for the coming year. In Mr. Fairbank you will have an admirable President, who, I feel sure, will uphold the reputation and the best interests of the Odontological Society. Last, though not least, I beg to express my most hearty thanks to the Council and Officers for their assistance and support, and would especially mention the Secretaries, to whose labour the constant supply of papers and casual communications is chiefly due.

Mr. F. J. BENNETT thought it would be out of order if the meeting terminated without proposing a vote of thanks to the President and office-bearers who were now about to take their departure.

Mr. HEPBURN seconded the motion, which was carried with acclamation.

The PRESIDENT thanked the members for the vote; and the thanks of the Society having been accorded to the readers of the papers and contributors to the museum and donors to the library the Session terminated.

The next meeting will be held on the second Monday in November.

News and Notes.

THE *British Medical Journal*, July 16th, says that Mr. Otey, the representative of Virginia, has introduced a Bill into the United States Congress providing for the appointment of a brigade dentist for each brigade, with the rank of major, and one for each regiment, with the title of captain.

A. L. ROWLEY, L.D.S., Eng., has been appointed Dentist to Aberystwith Infirmary and Cardiganshire General Hospital.

PROFESSOR VIRCHOW will deliver the next Huxley Lecture, in connection with Charing Cross Hospital, at the St. Martin's Town Hall, on Monday, October 3rd, at 4 p.m. Lord Lister will take the chair.

THE Examinations for the diploma in Dental Surgery of the Royal College of Surgeons of Edinburgh were concluded on the 30th ult., with the following results:—*First Examination*—Of 20 candidates the following nine passed the examination: John Galloway, Glasgow; John Alexander, Liverpool; James Atkinson Turnbull, Newcastle; Reginald George Willson, Sittingbourne. Kent; Robert Gavine Smith, Edinburgh; Frederick Arthur Wilson, Sunderland; Aleck Simpson Mackay, Hull; Andrew William Kinnear Brumwell, Newcastle-on-Tyne, and Samuel Weinstock, Russia. *Second Examination*—Of 15 candidates entered, the following 12 passed the examination and were admitted L.D.S. Edin.—Louis Anderson Dunn, Edinburgh (with honours); Adam Currie Reekie, Edinburgh; John Walter Horne, Slamanan; Charles Frederick Turnbull, Sunderland; William Joseph Low, Lancashire; William Black Alexander, Edinburgh; George Hills Watson, Edinburgh; William Gerard Morgan, Edinburgh (with honours); George Reginald Brittan, Plymouth; Campbell Hossack Baxter, Grimsby; James Craig Cameron, Brooklyn, U.S.A., and Walter Ralph Leverrier, Bridport.

THE DENTAL RECORD, LONDON: AUG. 1, 1898.

PYÆMIA DUE TO DIRTY TEETH.

THE notes of the case of the patient who died from pyæmia, which we are enabled to publish in this issue, are food for suggestive thought. The lay public are not alone in looking at dental lesions and the cure and prevention of them as matters of trivial moment. Both the public utterances of medical men, and far more their conversational remarks, show that they too do not appreciate the true importance of these matters. Nor must we except members of our own profession, who are sometimes apt to forget, in their admiration for operative technique, the importance of pathological phenomena and their prophylaxis. Cases of pyæmia consequent on infection by means of or in the neighbourhood of teeth are relatively uncommon but not absolutely rare. The septic matter is introduced in divers manners: sometimes the history of such cases points to the use of unclean instruments as being the agents of inoculation. How often this may have happened in the old dirty days it is impossible to say, but may be conjectured. Nowadays it is happily very rare, but the unusual rapidity and ease with which wounds in the mouth heal is apt to make men apathetic in carrying out their work on thoroughly aseptic lines. Sad as these cases are, one might almost regard them as beneficent agents in stirring men to be more thorough in sterilising, not only their instruments, but also the parts surrounding the seat of operation. This is of special importance where the soft tissues around the teeth will be cut, or lacerated, as, for instance, during the extraction of a tooth. Here it is not only important to be sure that the instrument used is thoroughly clean, but also it must not be forgotten that if the tooth be foul, coated with debris, which has been over and over again proved to swarm with septic micro-organisms, it is not only possible but

extremely probable that septic matter will be carried by the forceps from around the tooth into the soft tissues beyond. It is extremely probable that septic trouble would more often follow extraction of teeth, as so frequently performed, were it not that the blood flowing from the tooth socket helps to wash away the germs. The inoculation may, however, be due to some accidental cause. *The Berliner Herold*, of April 27th, 1898, contains details of such a case. A man during dinner bit unexpectedly on a hard bone, breaking a tooth, and wounding the tissues of the lower gum. Almost immediately severe inflammation started, which, in a few days, had spread over the whole of the tissues of that side, backwards to the larynx, suppuration had commenced, and the neck was much swollen. He now sought medical aid at a hospital, and the broken tooth and two neighbouring ones, which had become loose, were removed. Symptoms of blood poisoning followed, and in a few days he died. The account given of this case is obviously very incomplete; but in looking for the source of the septic matter we must be struck with the improbability of the bone, which presumably had been cooked, being septic. The fact that the tooth broke points to its being probably weakened by caries, hence we may with some degree of certainty assume that the man's teeth were themselves covered more or less with septic matter, and that the germs which caused his fatal disease existed ready to hand, needing only some accidental breach of surface continuity to gain entrance to the tissues, with such a terrible result. The person who neglects the rules of oral hygiene is allowing a poison to grow within his own mouth more certain and terrible in its action than the decoction of any herb.

THE DENTAL HOSPITAL OF LONDON.

CONVERSAZIONE AND DISTRIBUTION OF PRIZES.

THE above event took place at the Royal Institute Galleries, Prince's Hall, Piccadilly, on the 19th ultimo, the Right Hon. Lord

Ludlow presiding. As usual the gathering was a large one, and the evening, needless to say, was very pleasantly spent.

The DEAN, in the name of the staff, very heartily welcomed the assembled guests, expressing their special gratification at the presence of Sir Edwin and Lady Saunders; of Sir Edwin Saunders he spoke as the hospital's greatest benefactor. They also felt themselves much honoured by the presence of the hospital's first Dean, Mr. Thomas Arnold Rogers. Both these gentlemen had reached an age when they might have been excused if they had not resisted the temptation to remain in the comfort and luxury of their own homes, and the staff very much appreciated their self denial in adding to the distinction of the gathering by their presence. It was no secret that Sir Edwin was on the eve of his golden wedding, and an album was to be presented to him containing the signatures of all his old friends. All past students would desire to subscribe their names, and Mr. Ashley Gibbings would be pleased to receive them. With regard to the school, the Dean had pleasure in reporting that the year had been a very prosperous one. A larger number of students than usual had been entered, and the Pass List at the Royal College of Surgeons was the best they had had for some years. They had instituted a teaching museum, of which Mr. D. P. Gabell had been appointed curator, and the results already achieved under his most able curatorship proved how fortunate they had been in securing his services; he indeed promised to be a second Sir William Clarke. There was always something to dim their brightness, and this year it was the resignation of Mr. Storer Bennett after 20 years' service; the loss of his mature experience was a very serious deprivation, leaving them as it did for the most part with a very young staff, but the defect of youth was one which cured itself by time. Lastly, he had the happiness to state that owing greatly to the energy and assiduity of their treasurer, Dr. Walker, the building of the new hospital would be begun forthwith, and in two years' time they hoped to be in occupation.

LORD LUDLOW then presented the prizes as follows:—*Saunders Scholarship*—Mr. W. H. Thomas. *Ash's Prize*—Mr. W. H. Thomas. *Metallurgy*—1st prize, Mr. W. H. Thomas; 2nd prize, Mr. H. G. Williams; Certificate of Honour, Mr. F. R. Bishop. *Dental Mechanics*—1st prize, Mr. W. H. Thomas; 2nd prize, Mr. H. H. Belsey; Certificate of Honour, Mr. A. G. Payne. *Practical*

Dental Surgery—Prize, Mr. A. G. Payne ; Certificate of Honour, Mr. H. G. Williams. *Dental Anatomy*—1st prize, Mr. W. H. Thomas ; 2nd prize, Mr. A. G. Payne and Mr. H. G. Williams. *Dental Surgery*—1st prize, Mr. W. H. Thomas ; 2nd prize, Mr. H. Belsey ; Certificates of Honour, Mr. H. G. Williams, Mr. A. G. Payne, and Mr. E. F. Ackery. *Students' Society Prize*—Mr. S. C. Smith. *President of Students' Society's Prize*—Mr. L. F. Barton.

LORD LUDLOW, in the course of his address, said he felt it a very great compliment to have been asked to distribute the prizes ; but he must be permitted to say that he could have wished it had fallen into the hands of someone more conversant with this magnificent institution and the good work it had done. When he looked at the Report of 1897 he saw that his lamented friend Sir Frank Lockwood had occupied the position which he now held, and he could imagine the humorous way in which he would have addressed them. He could not say that the advantages of advancing years at all equalled the disadvantages, but still there were advantages, and one was that they were able to look back through the vista of years and note and profit by the changes which had taken place. In his own life they had been almost incredible. He could recollect the time when there were no railways and no telegraphs, when travelling was expensive and difficult, and when part of a traveller's luggage invariably consisted of a sword for defence against highwaymen. He made these remarks only because they led up to the enormous advances which had been made in surgical science in the same time. The advances in surgery in his opinion were far greater than in medical science in the same period, and in reflecting upon the cause he had in his own mind come to the conclusion that it was very much due to the discovery and use of anæsthesia, and when he spoke of surgical science he included in that term dentistry, to which it most certainly belonged. In his early days dentistry consisted in extracting teeth or filling them in a very rough and crude manner. He did not think that the public at large sufficiently recognised the vast benefits they received at the hands of the dentist of to-day. He had no doubt that the prolongation of life which marked the latter part of this century was largely due to the advances of dental science, which gave them such excellent means of mastication and prevented indigestion. To his mind the Act of 1878 put the surgeon-dentist in the position he ought to occupy ; it put him in the same position

as the medical man. The benefit secured to the public by that Act was paramount ; it protected them from the unqualified practitioner ; it required that the dentist should be registered and prevented those dentists who were not registered from recovering fees. It also enabled the profession as a body to deal with professional misconduct. He thought the Act might be called the Charter of the dentist. He hoped that the Institution of the Dental Hospital of London would long flourish, and that they would long have students as deserving as those to whom he had presented the prizes that evening.

Mr. J. SMITH TURNER proposed the vote of thanks to Lord Ludlow. Lord Ludlow, to whom he had listened with great interest, had carried them through a long course of years, marking by certain milestones the progress they had made ; but to his own mind the progress had been educational more than anything else. As was quite natural, his lordship had referred to the legal position, but it was the system of education inaugurated in the seventies which enabled them to put a good front to their request when they asked Parliament to give them recognition of their position and protection to the public. He had heard with great pleasure his lordship's allusions to the Dental Act, which had sometimes been decried. They had heard from him that it was a good Act, and that it was capable of much greater and more expansive application than it was sometimes supposed.

Sir DOUGLAS POWELL, Bart., seconded the vote of thanks.

During the evening a selection of music and recitations was given under the direction of Mr. Herbert Schartau, assisted by Miss Kate Cherry, Miss Lucie Johnstone, Mr. Albert Archdeacon, and Mr. Walter Churcher.

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

THE summer meeting and presentation of prizes in connection with this institution took place on July 15th, at 31, Chambers Street. Sir John Batty Tuke presided. The twentieth annual report to the directors was submitted by Mr. W. B. McLeod, the Dean. It was stated that the school was maintaining its position, the number who entered during the year being 22. The clinical side of the Dental Hospital was keeping pace with the advanced practice of the times. The number of ordinary cases treated in the

hospital during the year was 7,392, compared with 6,075 for 1896-97. The number of cases treated surgically also showed an increase, while the increase in the cases treated under anæsthetics was most marked. The report recorded with regret the retirement of Mr. Andrew Wilson, lecturer in dental anatomy, who had been succeeded by Dr. Guy. The number of students at present on the roll was 46. After the adoption of the report, which was moved by Mr. D. Hepburn, and seconded by Mr. G. W. Watson, the Chairman, in presenting the prizes to the successful students, congratulated the dental profession on the appointment of a registered dentist on the General Medical Council, which he thought was a mere act of justice. Another matter for congratulation was, he thought, the settling of a dental curriculum by the Council. He freely admitted that he was not at one with the majority of the Council on many points, because he thought they insisted upon the study and examination of certain subjects to too great an extent. He thought, for instance, that 18 months of anatomy, 12 months of dissection, and six months of systematic classes was too much to ask of a student who was studying for a profession which dealt with but a limited part of the body, and that it was an unnecessary amount of labour. He took it to be very much the same as studies which were imposed on the poor medical student, some of which were promptly forgotten as soon as the examination was passed. Still he fully admitted the strong necessity that a truly scientific education for the dentist was necessary, and perhaps, after all, the General Medical Council was right in insisting upon a course of study which would induce scientific methods of thought. Addressing the students, he thought many a man injured himself by working too hard during his student course. He (Sir John) held that if a man worked two or three hours at night after having attended his course of lectures during the day, he had done as much as the average man was able for, and, further, he thought these labours should only be conducted through five days in every week, which would leave the student plenty of time to maintain his bodily strength. On the motion of Dr. Jamieson, the congratulations of the meeting were passed to the Chairman on his recent knighthood, and a vote of thanks to him for presiding was also accorded.

GUY'S HOSPITAL PRIZE DISTRIBUTION.

A GARDEN party was held in connection with the distribution and, favoured by fine weather, was very enjoyable. A large and distinguished company assembled in the grounds, of whom only a small part could find room in the Physiological Theatre, where the prize distribution took place.

During the afternoon a programme of music was performed by the band of the 2nd Life Guards.

The prizes were distributed by the Right Hon. A. J. Balfour, M.P.

The following is a list of the Dental prize winners :—

Second year's Students (1897).—Hubert Arnold George Butler, prize £15; Alfred William Walker, Certificate; Victor George Smith, Certificate; Bertram James Sumerling, Certificate. First year's students (1897).—Percival Sidney Campkin, prize £10; Harry Hudson Evans, Certificate, (1898); Frank Warlow, prize £10; Hugh Titford Campkin, Certificate. Practical Dentistry Prize (1897).—Henry Albert Ellis Canning, prize £10; Alfred William Walker, certificate (1898); Percival Sidney Campkin, prize £10; John Stewart Farnfield, Stephen Holloway Olver, equal certificates.

The subject of Mr. BALFOUR's address was "The Endowment of Research," in this connection he said :—But the medical side, the educational side, of this great institution does not appeal, and cannot appeal in the same immediate manner to the sympathy and to the support of the general public, and yet I would venture to say that it really is of not less importance than the other side. No doubt the medical side exists for what I may describe as the curative side or the hospital side; but the hospital side could itself not flourish unless the medical schools of this country and all other countries, engaged as they are in the furtherance of the work of medical research, are liberally aided in the great work they have to perform; and what I have always felt is that the public do not thoroughly realise the responsibility which is thrown upon them in this respect. We talk, and we talk truly, of the enormous advance made, not only by the sciences generally, but also by the science and the art of healing, whether it be in the department of surgery or in the department of medicine. That progress has of recent years been, indeed, enormous and far beyond, I think, what the general

public is really aware of, and yet, great as that progress has been, I think that the experts before whom I speak will not differ from me when I say that there is every prospect of the progress being still more rapid in the future if only the conditions of the progress are thoroughly realised, and public assistance is adequately made to contribute to that end. The public, however, cannot be expected easily to realise what are the new necessities to which every medical school is exposed, how these necessities have arisen, and how they ought to be met. But, in truth, there are three considerations, which, if we bear them in mind, will fully explain, I think, the situation in which this and other great medical schools have been placed by recent progress. There was a period at which almost the only subsidiary sciences to the art of healing, the only ones of practical value, were anatomy and physiology. But all that has been changed, and at the present moment if a man is to make progress in medical research, he must draw his inspiration not merely from those sciences which deal with the human organism immediately, but from chemistry, and almost every branch, I think I may say every branch of physics. But while the tendency has, on the one side, been making itself manifest, while the interdependence of all these sciences is becoming more and more manifest, while the assistance which each can and must give to the other is becoming more and more evident, the separate sciences themselves are so rapidly accumulating, facts are growing so enormously that specialisation is necessarily and inevitably set up in every one of them, so that you have the double tendency of an interdependence between the sciences which make it necessary for every man who would further any one of them to have some working acquaintance with many others, but at the same time you have specialisation forced upon you by the accumulation—the rapidly increasing accumulation—of facts in every one of the sciences of which I have spoken. Now the result of this double tendency is that you must rely more and more for your work and research upon people whose main labour is research. You cannot expect a man in the interstices of a busy life, in the interstices of a great practice, to do much towards the advancement of his science. I have been amazed myself at the way in which doctors in large practice keep abreast of the ever-growing needs of their profession, but to ask them, in addition to their great practice, to carry on immense labours of research is to ask what, after all, very few men are able to accomplish. No doubt there are

exceptions—brilliant and splendid exceptions—but the exceptions in this case only prove the rule, and I am convinced that I shall have upon my side every man practically acquainted with the needs of the case, when I say that the work of advancing medical knowledge must, on the whole, more and more fall into the hands of those who devote themselves to research rather than to the overwhelming labours of daily practice. Well, if I am right in that—perhaps I have overstated my case, but I think not—at all events, if I am right in that, as I believe I am, it means that the cost of adequately equipping your medical schools with teachers, with the duty of providing not merely persons who can teach, but persons who can devote their lives to the work of developing the knowledge we already possess, must be provided for out of funds not at present forthcoming. The man who would succeed in research—the man who, at all events, desires to devote himself to research—must not be asked to burden himself with other labours. He has upon his shoulders not merely what I may call the specialised work of his profession, but he must have a sympathetic and appreciative eye to everything which is going on in other departments of science, so that even where he cannot follow those other departments minutely, he knows by the instinct of genius where to pick up those new discoveries which may help his own special branch of research. For men of that kind I think we require further endowment. I have all my life been an ardent believer in the cause, which is often laughed at—the cause of the endowment of research. In that cause I most firmly believe, and I think there is no branch of knowledge in which it may find a more useful field of application than in that of advancing medical knowledge. It is wonderful to think how the public are prepared to pay—and I think rightly prepared to pay—for the services of those whose clinical genius, whose power of absorbing all that is practically useful in the knowledge of their day, whose bedside genius, if I may so describe it, demands, and ought to have the fullest recognition—it is wonderful, I say, how the public are prepared to pay for that kind of genius; but apparently put aside with indifference the not less essential kind of genius which deals with the progress of knowledge and the furtherance of invention. This is not selfishness—I think it is lack of imagination. The work of the medical practitioner is seen at once—its value can be immediately appreciated; but he who spends his life in pursuit of the secrets of Nature working in his laboratory may very often

receive no public recognition at all during his life except from that restricted circle of experts who alone are, after all, capable of forming any valuable estimate as to his merits. I do not know whether the few words I have said on this subject—a subject which has always been very near my heart—will move the liberality of those who, while quite ready to assist the day-to-day work of a great hospital, look with indifference, perhaps sometimes with an ignorant indifference, at that other side of their work upon which not merely the value of the hospital now depends, but on which the progress of medical science for us, for our children, and for our children's children really ultimately depends.

Dr. PYE-SMITH proposed and Dr. STEVENSON seconded the vote of thanks to Mr. Balfour for his address.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.

THE Distribution of Prizes took place on the 20th ultimo, at the hospital.

Mr. MCKINNON WOOD, Chairman of the London County Council, presided, and presented the awards.

The DEAN, in the course of his report, having referred to the resignations and appointments to the staff, and the successes of the students, said a new bacteriological laboratory had been opened and a recreation ground had been presented to the Students' Club by Mr. E. J. Churchill. He closed with the announcement that Professor Virchow, of Berlin, had consented to open the next Winter Session with the delivery of the second Huxley Lecture, which was founded three years ago to commemorate the fact that the late Professor Huxley had received the whole of his medical education at Charing Cross Hospital. The chair will be taken on that occasion by Lord Lister, President of the Royal Society.

The following successes were scored by dental students:—Mr. E. F. Ackery—Huxley medal, with prize of £10; Anatomy (senior) prize; Physiology (senior) prize. Mr. H. F. Bellamy—Anatomy (senior) certificate; Physiology (senior) certificate. Mr. B. Hood—Anatomy (senior) certificate. Mr. E. Bayley—Anatomy (junior) prize; Physiology (junior) prize. Mr. W. B. Blandy—Anatomy (junior) certificate; Physiology (junior) prize. Mr. S. A. Boyd—Anatomy (junior) certificate; Physiology (junior) certificate. Mr. W. J. Duncalf—Anatomy (junior) certificate. Mr. D. Bridges—Anatomy (junior) certificate; Practical Chemistry (junior) certificate. Mr. A.

Rice—Anatomy (junior) certificate. Mr. A. B. Jepson—Anatomy (junior certificate). Mr. J. T. Carter—Physiology (junior) certificate. Mr. C. L. Lakin—Physiology (junior) certificate. Mr. G. S. Oades—Practical Chemistry, prize. Mr. A. R. F. Hubbard—Practical Chemistry, certificate. Mr. F. Cock—Practical Chemistry, certificate.

Mr. McKINNON WOOD, in his address, after congratulating the students, compared the competition of the class rooms with the competitions of after life, remarking that the former very often strengthened the friendship of the competitors, while the latter too frequently embittered their relations. No doubt the students realised that the real and solid benefit was not the award itself, but the expansion of mind and strengthening of intellect which came from the struggle. Touching on the reason of his selection to fill the chair, he thought that it was due to two circumstances, first, he was a very near neighbour, and secondly the County Council and Charing Cross Hospital were collaborators in trying to attack the death rate; the hospital advised, and the County Council tried to live up to the advice. The County Council were going to do away with a narrow and tortuous lane, and substitute a broad road of 100 feet wide in close proximity to the hospital. They were doing so because they regarded these narrow alleys as hot beds of disease. He concluded by saying that although the London County Council could not take any responsibility with regard to the Teaching University for London Bill, he was deeply interested in it, and hoped it would pass.

Sir JOSEPH FAYRER moved, and Mr. J. H. MORGAN (the newly appointed Treasurer to the Hospital) seconded the vote of thanks to Mr. McKinnon Wood for presiding.

Abstracts and Selections.

PYORRHEA ALVEOLARIS—WITH SOME NOTES FROM THE PRACTICE OF THE AUTHOR.

By A. W. HARLAN, A.M., M.D., D.D.S.

It is no part of my plan to-night to read extracts from the papers of other writers for your benefit, as you have the same means of access to them that I have, and if you have not availed yourselves of the privilege it is no fault of mine.

We have been told that the ancients suffered from loosening of the teeth, and from recession of the gums and the wasting of alveoli;

in fact, I have read somewhere that evidences of these facts have been seen by living human eyes when looking at the skulls of mummies and other cheerful specimens of bygone generations of men and women. I have seen these subjects in Washington, Cambridge, and elsewhere, so that I know that the ancients must have suffered in this way when mercury was not used as a medicine and salt pork was not an article of daily diet. Indeed, I believe that port wine or beer was not the ordinary daily beverage of some of the savages of bygone times.

So far as I know, women did not use sewing machines, huddled close together in ill-ventilated rooms, nor did the men of those days chew tobacco or smoke pipes, or do book-keeping with electric lights to take the place of sunshine. There were no sleeping carriages, nor steam heat, nor razor-pointed shoes; then those people lived before there were dyspepsia pills or patent cures for gout or rheumatism. They did not have the blessed privilege of choosing from dozens of proprietary medicines, warranted to destroy various pus-producing cocci, whether they were prefixed with "staph" or "strep," or some other new-fangled way of distinguishing them from others that are not pathogenic.

There were no forceps or separators, or floss silks, or files, or dental engines, or tooth-brushes. Malnutrition and chewing-gum had not been heard of, and the uric acid diathesis was not even dreamed of. People of those ancient times suffered from loose teeth and socketless teeth just the same, and still they were deprived of the valued service of stomatologists, dentists, and oral surgeons. The delicate needles of gold, platinum, and steel, with the aseptic plungers, were not invented then, nor did our forefather dentists need them, as the slender push-and-pull scalers had not been evolved. There were no local and few general anæsthetics, so that all they had to rely upon were astringents and detergents for laving their mouths.

Men and women lived close to nature in those remote ages, but, in spite of these facts, teeth became loose, and have continued to loosen until the present time. If we could only summarize all of the causes of loosening of teeth, it is doubtful, even now, if we could in one or two short generations totally prevent such a disaster to the human race.

I have no new theory to present to you to-night, because I am not sure that the same causes are universal throughout the United

States. In the mountains, where dampness does not exist and microbes do not thrive, the varieties of looseness of the teeth are not the same that we see on the borders of a great lake or in the lowland, where miasms flourish and people suffer from intermittent fevers and rheumatism.

In cosmopolitan cities, like New York, Philadelphia, and Chicago, where the racial characters are so numerous, we must seek for different causes, largely influenced by hereditary tendencies. The robust outdoor workers, both men and women, do not seem to be so often attacked by loosening of the teeth as those whose occupations confine them to indoor life. Many of the prevalent diseases, like typhoid, the various forms of catarrhal and other inflammations of the mucous membrane, perhaps do, in many instances, furnish suitable fields for the ravages of the particular coccus which invades the territory surrounding the neck of the tooth.

The administration of medicines, frequently not suited to a case, may be responsible for much of the irritation and consequent detachment of the pericementum from the neck of the tooth. It is certain that many cases of loosening are due to a crowded condition of the teeth, and it is equally certain that many others are due to the unwise extraction of teeth and the fitting of partial dentures to the mouth not suitable as substitutes for the teeth already lost. Badly made contour fillings, and those improperly finished, are a frequent cause of the detachment of the gingival margin of the gums; neglect, uncleanness, the formation of salivary deposits, pernicious habits of eating and drinking, lack of exercise, the abuse of toothpicks and thread, discs, files, clamps, and poorly-fitting separators and regulating appliances, all have something to do with the inception of the initial lesion.

I am not one of those who believe that gout and rheumatism can be regarded as potent factors in causing loosening of the teeth. All loose teeth are not incrustated with deposits on their roots. Many, it is true, have deposits on them, but not all. In framing a system of treatment, each case must be studied for the cause, and if it be found, the prognosis may be favourable or not, as the history of the case will disclose.

Too little attention is paid to the care of the teeth of families by the dental surgeon himself. Incipient pyorrhea is not checked soon enough, and sooner or later the practitioner is brought face to face with a condition of things not desired or easily controlled by him.

We find that our regular systematic clientèle are not the frequent sufferers, but those migratory people who are never satisfied with the conscientious care of a family dentist, but who flit from office to office for reasons of their own, until gradually their teeth are all, or nearly all, in a hopeless state of chronic looseness. (Some do not consult a dentist at all until their teeth are hopelessly loose.)

I do not think it proper to consider syphilis as an etiological factor in producing looseness of the teeth, although perhaps a small percentage of the cases seen may be traced to such a cause or to the heroic medication of the patient during the activist ages of this disease.

It seems to me that Witzel was nearer right in calling loosening of the teeth "infectious alveolitis" than any of our modern authors.

In presenting these thoughts to you I am not unmindful of the strong claims to a name presented by Magitot, "symptomatic alveolar arthritis;" Black, "phagedenic pericementitis," and the late Dr. Riggs, "Rigg's disease;" Ingersol, "alveolar ulceration," and Wedl, "pyorrhea alveolaris." A few names have been presented by other authors, but for our present purpose we incline to the latter as more fully expressing what is meant by an author when he talks of ulceration of the socket and coincident loosening of teeth. "What's in a name?" Is it not true that many of the causes of loosening of teeth already mentioned are grouped together in one mouth, and the patient may at the same time be suffering from some intercurrent malady not responsible for the appearance of the gums? Some of the lesions of the gingivæ are so simple, if seen in the beginning, that little or no treatment will cause them to disappear; and still if one or more teeth are missing we find some of them migrating for support against a more firmly fixed tooth, aided frequently by abnormal mouth-breathing, which is a potent factor in loosening, yet little regarded in many cases. Any cause, obesity, occluded or mal-formed nasal passages, or growths in the post-nasal region, will be sufficient to induce mouth-breathing. In such cases the teeth spread and project, and pockets are formed around the roots, usually on the lingual aspects at first, but later they are seen encircling the whole root.

When my attention was first drawn to the loosening of teeth, in a constantly growing practice, about 1878, I began a series of observations as to the causes most prominently concerned in bringing about such phenomena. I was very soon impressed with the idea that the mere deposit of the so-called salivary deposit had

little to do with what we deem pyorrhea alveolaris. It is true that many teeth are loosened and lost from accumulations of tartar or calculi on the tooth, roots and crowns, but we do not find deep pouches or pockets alongside the roots when such deposits alone are found on the teeth. The removal of such deposits, the use of astringent and stimulating washes, will soon re-establish a good colour and firmness to the gums. That heredity played an important part in the causation of looseness of the teeth became firmly fixed in my mind; that we could not ascribe all loosening of teeth to one or two causes, the abuse of liquors, a salt meat diet, mercury, and not even to gout or rheumatism, or both, could we ascribe even a small percentage of these cases; this is true at least in Chicago, where all of my labours have been confined. The mere fact of a tooth being deprived of the pulp is not cause sufficient for the tooth to become loose; indeed, its destruction in many cases is imperatively demanded to permit the tooth remaining in the mouth. As I was unable to group causes to cover all cases, I concluded to study them individually, with the following results:—

First, mercurial stomatitis. In all of these cases there is a symmetrical detachment of the peridental membrane, which yields to a treatment of cleansing the roots and the injection of trichloracetic acid every second day around the individual tooth, and the frequent use of boro-glycerol solution, ten per cent. in water.

Second, syphilis. Thorough removal of the deposits and a potassium chlorate solution, five per cent. in water, used frequently, five to ten times daily, and the administration of ten-grain doses of potassium iodide three times daily, after meals, in peppermint water, is generally all that is required. In all other cases the general rule is to remove deposits and necrosed bones thoroughly, and then inject the pouches or pockets with, first, for one week, a bichlorid solution, one to one thousand, made with hydrogen peroxide, say one grain to two ounces of the peroxide, and five grains of tartaric acid. Later I use at first a strong solution of trichloracetic acid for two or three visits, about five to eight per cent. in distilled water. When I find that the case is doing well, say at the end of two or three weeks, I begin to use about a five per cent. solution of alumnol, in water, to which is added about three per cent. of resorcin.

I usually flavor this with oil of wintergreen to render it pleasant to the taste (any other oil will do). I inject this every other day

or every third day, until the pockets are closed with a new growth. Where there is no necrosis of the process I use the zinc iodid solutions, one to three per cent. in distilled water. The patient must use, during the whole course of the treatment, either a hydronaphthol wash or boro-glycerol mouth-wash from five to ten times daily. The hydronaphthol wash is made as follows :—

Hydronaphthol, gr. xx. ;	Alcohol, oz. iii. ;
Oil cassia, min. iii. ;	Water distilled, oz. xx M.

S.—Dilute with water, if necessary.

Or a boro-glycerol wash, one ounce to twenty of distilled water. Frequent massage of the gums is recommended. Loose teeth are banded with pure silver, or silver ninety-five parts and gold five parts. Pure water is recommended, and frequent bathing is insisted upon, except in the cases of the extremely aged. Personal habits of moderation are advised in all things, especially in eating and drinking. I regard a perfect occlusion as important, and accomplish this by grinding the teeth when it is demanded.

Any intercurrent constitutional malady is left to the medical adviser.

The above treatment, if persisted in faithfully for three months, will generally effect a cure. If it does not, I allow the patient to go for a month, and recommend and give the case a second period or this vigorous treatment for another three months. At the end of that time the subject will appreciate the necessity for following your directions, and with his co-operation the case will yield gratifying results.—*Cosmos*.

MULE DENTISTRY.

PERHAPS but few of your readers are acquainted with the amount of veterinary surgery which is practised upon some of the mules abroad, some hundreds of pounds being expended annually in having veterinary dentists examine and treat the teeth of the pit-horse, and especially of the much-maligned mine-mule. Such is the case, however, and it is safe to say that the molars of these beasts of burden receive far more attention than do the teeth of many of the men and boys who are their daily co-workers in the underground caverns. A well-known veterinary dentist, who makes a speciality of treating mules' teeth, has more patients awaiting their turn for his services than, perhaps, any dentist in the "old country." At present he is engaged in treating the teeth of the 290 mules used

in working the mines upon which I am engaged, which, by the bye, is only one of a dozen similar big companies that find use for his services.

"Grateful" Patients.—A vicious, stubborn mule, that snaps at its driver, and kicks at the tantalising door-boys, several hundred feet beneath the earth's surface, is neither an attractive nor a docile patient, so that the occupation of the veterinary dentist is not pleasant ; but he has studied the peculiarities and wickedness of his long-eared patients, and goes about his work, showing neither fear nor favour no matter how vicious his patient may be. It frequently happens that just as he has finished doctoring the mule's teeth at a colliery, his patients are so regretful over his near departure that they make frantic efforts to keep a mouthful of his person with them, or, failing in this, they try to leave the imprint of one of their sharp shoes on his anatomy as an everlasting souvenir of their appreciation. The mule's stubbornness, however, is more than offset by the dentist's grit and determination, and he never passes a patient until he has closely examined its mouth, and treated all teeth that are in need of his attention.

A Narrow Escape.—A few days ago, as my friend the veterinary dentist was completing his work at one of the mines, he turned his attention to a big mule that is exceedingly vicious and sly, and had just grasped the mule's tongue, in order to have a better view of the teeth, when the animal suddenly brought his teeth together with a snap over the doctor's right hand, cutting the thumb to the bone. The beast was emphatically rebuked for this ungratefulness, the wounded thumb was dressed, and before the mule was set free it had lost one of its offending molars and several others were filed down considerably. My informant asserts that in his entire experience that was the first time that he had ever been bitten badly, although his patients frequently have the satisfaction of sinking their teeth into the folds of his heavy clothing. The teeth of most mules, he tells me, like those of human beings, require some attention, although the former do not often decay, as the food they masticate is neither rich nor destructive. Besides, Nature has endowed mules with a rough tongue that is an excellent substitute for a tooth-brush, and which the beast whisks over and about his teeth after he eats.

Why Operations are Necessary.—One of Mr. Mule's amiable weaknesses, though, is the habit of bolting his food, which frequently causes dyspepsia or other disease, such as affect humanity.

This bolting of his food is not caused by a desire to hasten his meal so that he can hurry back to his work, but because his molars or back teeth, with which he does his grinding, have more work to perform than his front teeth, with which he nips the pernicious door-boy and driver, wear away in the course of a few years, and become much shorter than the front ones, thus allowing the food to pass into the stomach without being properly masticated. In cases of this kind the incisors, or front teeth, have to be filed down an eighth or a quarter of an inch, so that they are all uniform. Filing the teeth is what the mule dislikes, and it is not much wonder, as he is locked in stocks, his head firmly secured, and then when his tongue is pulled to one side the dentist wears the projecting teeth down with an instrument that has a greater rasp than a coarse file.

No Laughing Gas given.—As soon as a mule sees the dentist with his bright steel instrument he seems to realise what is in store for him, and distends his nostrils and eyes. He moans pitifully when a tooth is being extracted, and seems to be happy when the diseased molar is drawn out, no merciful anæsthetics being given. At times in showing his objections to the operator's heroic measures, the mule jumps over the bars behind which he is confined. The molars of a mule are $3\frac{1}{2}$ inches in length, while the incisors measure $2\frac{1}{2}$; and judging from his signs of pain the nerves are as plentiful and as sensitive as are those of human beings. An expert dentist operates on twenty-four mules a day, and a mule patient will remember the operator as long as he lives. The extraction instruments are from two to three feet in length, and the entire case of instruments weighs fully sixty pounds. The teeth of every mine-mule are examined and treated, if necessary, once or twice a year, and as soon as the dentist puts in his appearance at a mine his former patients become unusually nervous and vicious. As you may well imagine, of course, horse-dentists in England have a great deal to do in this direction, but I imagine that twenty-four violently objecting patients per diem is rather out of the ordinary experience.—Special Correspondence of *The Road*.

THE DAWN OF MODERN DENTAL LITERATURE.

By WILLIAM H. TRUEMAN, D.D.S., Philadelphia.

OF the extent and character of the dental literature of ancient times but little is now known. It is said of many medical writers of antiquity that they wrote upon the teeth. It is not probable,

however, that any of these books have been preserved in their entirety; indeed, very little of their writings of any kind or character have survived, and this little has necessarily passed through so many revisions and expositions that it is difficult, if not impossible, to give an intelligent idea of what they originally were. Of many of their books not a trace can be found; all we know is the title or, perhaps, a few thoughts or suggestions preserved through quotations of later writers. Even of the great teachers, all that has come down to us are the more prominent of their discoveries, or the aphorisms, or distinctive doctrines taught as theirs by their professed disciples. Traces of a dental literature may be found in these, and here and there an intimation that the teeth and their diseases had occupied their thoughts. Now and again an historic incident, a joke or pun of some ancient jester, or an antique tomb, gives evidence that our art existed and was practised in remote times; to what extent, the character of the work and all details concerning it have been so far completely lost. We may hope that this chapter of dental history will be brought to light as the records of long-forgotten civilisations are discovered and deciphered.

We have in this little book I now show you, the oldest printed book known to dental bibliography, dated 1532, evidences of this pre-existent dental literature of which I have spoken. It is in German; translated, the title-page reads, "Teeth Medicine; against all kinds of defects and diseases of the teeth; many wholesome and well-tried medicines extracted out of the books of Galen, Avicenna, Mesue, Cornelius Celsus, Pliny, and others; together with compendious and useful instructions as to how one can keep his teeth healthy, and how one can extract the bad hollow teeth which get to paining easily."

This copy was printed by Peter Jordan, at Meyng. I have seen another copy, dated 1541, printed by Christopher Egenolff, Frankfurt; and I find record of another publication under date of 1614, slightly differing in title, but undoubtedly the same. We thus see that it was kept before the public some eighty years at least. For a few minutes let us examine this curious and quaintly worded little book; let us see who these worthies were to whom it refers, and what they are credited with saying. First, however, permit me to say that it was written for lay readers, by an anonymous writer, and belongs to a class of publications upon medicine and allied subjects widely differing in value; while the best of them have their use as

educators of the public, they have no standing in professional literature. This belongs to the better class, and historically, apart from being an excellent specimen of early printing, introduces us to the teachers and teachings of dental science as presented to laymen three centuries and a half ago.

Whoever the author of this old dental book was, he has confined himself in making his extracts to strictly standard writers, and in so doing simply followed the custom of medical writers of his day. It was not a progressive age, but rather one in which age and antiquity commanded more respect than real merit. We will now rapidly glance over its contents.

It is divided into thirteen chapters, with titles as follows:—(1)—When the Teeth grow, and how many a Man has ; (2)—The various causes of Bad Teeth ; (3)—How to assist Children that their Teeth may grow easily ; (4)—Of Toothache ; (5)—Of Hollow Teeth ; (6)—Of Teeth on Edge ; (7)—Of Yellow and Black Teeth ; (8)—Of so-called Sleeping Teeth ; (9)—Of Loose Teeth ; (10)—For Worms in the Teeth ; (11) —Ulceration, Bad Smell, and Decay of the Gums ; (12)—How to draw Bad Teeth ; (13)—How to save the Teeth.

The preface reads, translated, as follows : “The God that is almighty, the God to whom all things from the beginning are known, has been pleased in His wisdom to so order that the lower animals and likewise men are provided with teeth, firstly, to secure their food, also to make the first preparation of the food that nature’s work may be properly performed.

“The stomach (so the organ to contain the food is named ; if it is so treated that it becomes weak, all the other organs will grow weak) first receives the food immediately after it is prepared by being cut up by the teeth.

“Note the above, and take care not to cross the stomach too much, or to goad it, lest it become sensitive and in consequence inflict pain.

“However, the teeth are not exclusively preparers of the food. They have an important office as formers of the voice or speech. The tones of nature, and also of men, striking in proper order the teeth and the tongue, are so controlled that they become now the loud or again the charming voice.

“As Pliny says, ‘The teeth are necessary to a goodly countenance and to speech.’ There are some letters and words which cannot be properly spoken when the teeth have fallen out, or are worn

and broken, or have grown short without being broken, and the voice then becomes harsh, without force, and unpleasant.

“When the teeth become bad it is natural that the mouth be kept shut to hide them.

“When a tooth is raised up and seems, like a vegetable, to have grown large at the top, and makes one to suffer, it should be shown to an experienced physician with the request that he draw it out at once.”

In the first chapter it states, in substance : Some, very few, however, are born with teeth. A few have instead of teeth a single bone taking their place. The teeth usually begin to grow the seventh month after birth, and keep on growing at intervals until there are thirty-two—to some the teeth come easier, to others more painful : to some sooner, to others later. To many, as Pliny says, teeth grow in their eightieth year. To some, in old age, the teeth fall out and new ones grow, as happened to one man aged one hundred and four. He relates of another that he had two lower jaws, and on each several teeth. These latter are most likely some of Pliny's marvellous tales.

The second chapter, treating of the various causes of bad teeth, enjoins that whenever any mishap occurs to the teeth, which is often the case, it should be promptly met and counteracted by proper remedies before it becomes permanently settled. Care should be taken not only to see that no fragments of food remain between the teeth, but to wash and cleanse them with pure water. Indigestion should be avoided, as it produces vapours, rising from the stomach, which injure the teeth very materially. Vomiting also causes damage to the teeth, but as this is sometimes salutary, the mouth should be immediately refreshed and washed with rose-water and vinegar, or with any other purifier. All food detrimental to the teeth, such as dry figs, boiled honey, garlic, fat things, sour apples, and such things as set the teeth on edge, should be avoided. Care should be taken not to bite on hard things, to avoid too hot or over cold food ; beware of quicksilver, or salves in which there is quicksilver, especially to take care if it is put on heated coals, its vapour does not enter the mouth and touch the teeth ; in handling it, do not put the fingers into the mouth. Nor should we go to sleep after a heavy meal, for this will also damage the teeth. The precepts in this chapter are all credited to Avicenna and Mesue.

In the third chapter, how to assist children that their teeth may grow easily, it is advised, children to whom teething is painful should be often bathed, after which the gums should be gently

rubbed with the finger, the finger having been first dipped in chicken-, goose- or duck-fat, and pressed upon the spot where the teeth are supposed to make their eruption. It enjoins watchfulness, when the second teeth are erupting, that the first tooth is removed as soon as it is seen to be impeding the progress of the permanent tooth. If the second tooth has been pressed out of place as soon as the first tooth has been removed, the new tooth should be pushed every day towards the place where the first tooth was until it sits there and fits in among the others. This chapter is also credited to the writings of Avicenna and Mesue.

The fourth chapter, on toothache, begins by saying, "What toothache or pains in the teeth are, knows no one better than he who has experienced them, and I think there are no greater pains than these." Toothache may originate from a bad state or a destruction of the blood-vessels entering the teeth. Three ways of stopping the pain are given, credited to Johannes de Figo. They are, first, care in eating and drinking; second, by bleeding and purging; third, the taking of medicines, either simple or compound; these are of two kinds, one to stop the pain coming from heat, the other that coming from cold, a distinction, he adds, we cannot afford to lose sight of. Then follows a list of remedies it is not necessary to repeat. This chapter is credited to Johannes de Figo and Avicenna.

The fifth chapter, on hollow teeth, is particularly interesting. It treats of decay of the teeth, and, quoting from Mesue, says it may be stopped in three ways. First, by purging; second, by destroying the matter which hollows them out and eats them away. This is done by boiling cockel, that grows in rye and wheat, with vinegar, and holding it in the mouth, or vinegar in which capers root with ginger is boiled; third, by getting rid of the hollow, which is done in two ways. The first is to scratch and clean with a fine chisel, knife, file, or with any other suitable instrument the parts attacked, and fill with gold leaves, for the preservation of the remaining part of the tooth. Presuming this to be reliable, the operation of filling cavities in carious teeth with gold, for the purpose of arresting this destructive process, was known to Mesue more than a 1,000 years ago.

The next chapter, on teeth on edge, contains nothing of interest. It is credited to Mesue and Figo.

Chapter VII., on yellow and black teeth, and the next on sleeping teeth, are of but little interest.

The ninth, on loose teeth, gives us an intimation of pyorrhœa. Teeth loosened by accident it directs to be bound to the sound teeth with silk or gold thread, using light and soft food and astringent mouth-washes. The remaining chapters have no present interest.

Between this little book, compiled from authors most of whom had been dead when it was written from 500 to more than a 1,000

years, and which may truly be said to belong to ancient dental literature, and the next which I show you, written by Bartholomew Eustachius in 1563, dental bibliography records but three works. Judging from the titles, I take them to be much like this which we have examined, and to possess but little other than historic interest.

About this time Bartholomew Eustachius, the third master in anatomy of the triumvirate, who are recognised as the fathers of modern anatomical science, the one with whom we as dentists have most to do appeared upon the scene. His works are not numerous; indeed, even a long life is far too short to accomplish much of such exacting, painstaking, and careful work as that which Bartholomew Eustachius has presented to the world. The various papers which Eustachius produced during his life were collected together and published in a volume, entitled "*Opuscula Anatomica*," at Venice, 1563. Although published together in one volume, each treatise or essay was complete in itself. The last of these remarkable essays gives an account of the teeth, and was the first to enter fully into a history of their development. For this work he was fully equipped, his studies in embryology and comparative anatomy, so far in advance of any that had preceded him, were brought to bear upon this work, and have added much to its value. It is regarded as by far his best effort; indeed, in some respects he spoke as a prophet, describing conditions which he knew existed, but which were far too minute for human vision. Many years after his death the microscope revealed the accuracy of these deductions. It seems a pity that this work, so excellent, should have been so much neglected that to many well informed upon dental topics it is quite unknown.

In conclusion, permit me to present this work, "*Tractatus de Dentibus*," or a treatise upon the teeth, by Bartholomew Eustachius, as the first contribution to modern dental literature. It was not a chapter forming a part of some other work, but a work distinct and complete in itself. He says in the dedication "that he had collected together all he could find of that which had been written concerning the teeth; to this he added the results of his own labours in diligent original research, not in the effort to establish some pre-conceived doctrines or ideas, but rather in the spirit of an impartial and upright judge accustomed to place in order and sift evidence in the effort to reach the truth." His book is a systematic arrangement of so much of this data as, after careful study, proved worthy of acceptance. The title-page of the first edition, published under the supervision of the author, is particularly appropriate: "*Bartholomaei Eustachii Sancto severinatis Libellus de Dentibus*"; which, freely translated, may read, "Bartholomew Eustachius, his little book, wholly devoted to the teeth." It marks the dawn, as it were, of the literature of our specialty.—*International*.

THE DENTAL RECORD.

VOL. XVIII. SEPTEMBER 1st, 1898.

No. 9.

Original Communications.

SWELLING OF SUBMAXILLARY GLANDS DUE TO THE PRESSURE OF A LOWER DENTURE.

By W. H. DOLAMORE, L.R.C.P., M.R.C.S., L.D.S.

FOR some years past I have attended a patient, a lady of about 28 years of age, for bad pyorrhœa alveolaris. When she first came to me, on the recommendation of my friend Mr. Wright, of Matlock, who had previously seen her, the disease was already far advanced, indeed, I remember her more immediate cause of complaint was an abscess which had formed on the lingual surface of the gum in the neighbourhood of the apex of the lateral lower incisor of the left side. Abscesses have from time to time re-appeared, and the disease itself has run its usual course, having, perhaps, more acute symptoms than is usually the case. The way in which a tooth, relatively speaking, firmly fixed, and the gum around practically free from disease, became in the space of three months so loose and so bathed in pus as to need to be extracted (if one can use the term extraction for the lifting out of a tooth quite detached from its root membrane) is extremely suggestive that the disease is due to some organisms infective in nature. The treatment that has proved of most service has been the use of sulphate of copper, abscesses, when they developed, being laid freely open. It was impossible to band the teeth so as to keep them firmly fixed on account of the objections of the patient to this course, and trying to secure them by lacing together with thin platinum wire caused so much periosteal irritation that the wire had to be removed.

However, the treatment has at least served to keep the disease in abeyance, and I do not think that her teeth are more loose now

than when I first saw her about four years ago, though, of course, she has lost the tooth previously referred to, which, curiously, was an upper bicuspid, though, speaking generally, the disease is more marked in the lower than in the upper jaw.

Seeing that she was deficient in masticating teeth in the lower jaw, having lost the first and second molars on either side, it seemed reasonable to suppose, quite apart from any other consideration, that the insertion of a denture would relieve the lower front teeth of some of the wear and tear of biting, and so, perhaps, help in preventing them becoming increasingly loose. I therefore made and inserted for her an ordinary bar lower. There was nothing to note during the first few weeks that she wore this denture. It pressed in one or two places, but these having been eased the plate became quite comfortable. After, however, wearing it for a few weeks she noticed a swelling had formed under both the angles of the lower jaw. The swellings came somewhat suddenly, though she may not have noticed them while they were yet small. She tells me that they increased markedly in size after meals. She was going that day to the seaside, and being suspicious that she was suffering from mumps, consulted her medical man, who assured her that this was not the case, and advised her to leave out the plate. This she did, and she says, that by the time she arrived at her destination—Bognor I believe it was—the swellings had completely disappeared.

It is curious to note that she is of opinion that her gums are usually worse when she is by the sea, this, of course, may be nothing more than a coincidence. She tried several times after this to wear the plate, but always with the same result—a return of both the lumps.

On her return to town she wrote telling me of this, and, when sending her an appointment, I asked her to wear the plate for a few hours before coming to see me. This she did, and I found the swellings above referred to, they occupied the region of the superficial portion of the submaxillary glands, had a defined margin, but were quite soft to touch and compressible. There was no sore place in the mouth, but the lower margin of the plate, in the bicuspid region, obviously reached down to the floor of the mouth.

Here, I may note that the patient is very thin and has small bones. The depth of the body of mandible being less than usual

and a finger placed on the floor of the mouth can readily feel one placed over the mylohyoid muscles, the thickness of tissue between the two fingers being very slight. I cut away freely the lower margin of the plate which, since then, she has worn without any return of the swellings.

There is no doubt in my mind that the swellings were due to the plate pressing on Wharton's duct, so impeding the flow of saliva from the submaxillary glands. That the lumps were due to the salivary glands becoming swollen is more or less proved by the fact that they became markedly larger after meals, and a glance at the course pursued by Wharton's duct shows that, as it passes upwards, forwards and inwards beneath the mylohyoid muscle it comes at the anterior border of the hyo-glossus muscle near to the floor of the mouth, close to the jaw in the bicuspid region; in very thin subjects but little tissue can cover it at this point, and pressure exerted here would obviously obstruct its course. A plate is scarcely likely to exert this pressure save in patients with fragile lower jaws. It is possible that the tissues around the mouth of this patient may be in an irritable condition, for I cannot conceive that these can escape some degree of infection by absorption from the discharges which escape year after year in pyorrhœa alveolaris.

DR. BUIST, Secretary of the Dundee and District Branch of the British Medical Association, writes :—I am instructed to send you the accompanying copy of a resolution received from the Registrar of the General Medical Council, relative to the administration of anæsthetics by registered medical practitioners for dental operations performed by persons not registered under the Dental Acts, to which the council of the branch asked me to draw attention :—“ That the members of the dental committee agree with the opinion expressed by the executive committee that the practice referred to in Dr. Buist's letter is most reprehensible, and recommend that if a charge of ‘covering’ in connection with such administration of anæsthetics were brought before the General Council it should be entertained and investigated.”

THE DENTAL RECORD, LONDON: SEPT. 1, 1898.

SCIENTIFIC RESEARCH.

THE scientific aspect of dental anatomy and dental diseases does not, we are afraid, appeal to the average student. For the most part students prefer a certain amount of cut and dried matter, and preferably such as has some bearing on their practical work. Anything outside this is often "got up" solely with reference to an examination, which to be "fair," according to their standard, must confine itself within narrow lines. We are not concerned now to show that it is incumbent on all joining a profession to possess himself of as wide a knowledge as possible merely because it is his duty so to do. Much might be written on this aspect of the question. It is our wish now to point out that these practical points, of which some so glibly talk, are the outcome of scientific research. We do not mean that the research has necessarily been carried out by him who makes that deduction which has proved of use in the practice of dental surgery. Often the work has been done by another, perhaps been the work of many others at various times and at long intervals; none the less the data so collected are the foundations of modern dentistry. Take the subject of dental caries, its treatment, in the modern sense, dates from the day when it was proved to be a disease commencing from without the tooth; while any preventative measures we may advise must be solely founded on the work of those who proved how large a part micro-organisms play in its causation. To cite further instances would be to labour this fact unduly; but, if this be a fact, surely the scientific aspect of these matters becomes of surpassing interest to all. All are not able, from lack of knowledge or of time, or from other causes, to carry on the work of scientific research, but all are equally interested in the question. On the student now joining the hospitals we

would urge that it is really important for him to take a wide and intelligent interest in these scientific questions. It is not so important to have at his fingers' ends the various theories which ingenious minds have evolved as it is to have a broad knowledge of the work which has been done. But few of these students will continue the work; but the time has surely come when the others should do something to help those from whose work we benefit so largely. It is truly an astonishing fact that at the present time there is no teaching post open to a dentist in the United Kingdom from which he can draw a stipend sufficient to maintain himself and devote his whole time to the work of preparation for this. There is no scholarship or grant in aid of research which would enable a man to carry on his work unhampered by the demands of a practice. We believe it is high time that the profession should provide the requisite funds. It is a matter which affects us all, for we should benefit by this work. It is true that the public would benefit to a larger extent. Mr. Balfour has endeavoured to attract public support for medical research; but we fear we have little to hope from this direction, and the help must come from the profession itself.

News and Notes.

At the Rhyl County Court, on August 6th, Miss Mary Jane Jones, domestic servant, Bank Buildings, High Street, Rhyl, sued Mr. Thomas Lukyn, dental surgeon, Church Street, for the return of £5 paid for a set of teeth, upon the ground that the consideration had failed, and she also claimed £3 in respect of illness which was alleged to have been caused by the teeth supplied by defendant being a misfit. Mr. J. Roberts Jones appeared for the plaintiff and Mr. Gamlin for defendant. Mr. Roberts Jones explained that the defendant had stated that he was prepared to alter the teeth, and that the plaintiff's gums had shrunk, a fact which he had called

the plaintiff's attention to in the first instance when she consulted him. The plaintiff said that about twelve months ago she had suffered with her teeth, and, on the advice of her mistress, consulted the defendant, who advised her to have her stumps extracted. She consented. Gas was administered twice, for which she paid 10s. 6d. each time. A number of stumps were extracted, and she arranged that defendant should supply her with a new set of teeth for £5, making £6 1s. in all. Some little while after the stumps were extracted the defendant sent for her, and he took a mould of her mouth. He sent for her in about two weeks, and told her that the teeth were ready. As soon as she put them in her mouth she found they would not fit, and told the defendant so. She tried to wear them, but found that the upper set dropped down from their place, and that the lower set rocked as well as turned in her mouth. When she kept on complaining the defendant took another impression, and made a new lower set, but she did not like the black colouring about the new ones. They went all right until she got home and had tea, and then they were as bad as ever; they did not fit. After defendant told her to go to another dentist, she went to Mr. Edwards, and asked if he would alter the teeth, but he refused to do so, as he did not know what the black stuff was in the lower set. Finally she gave Mr. Edwards an order for a new set, costing £5, and they fitted the first time she put them in her mouth, and she had not had any trouble since. In cross-examination the plaintiff admitted that she had suffered a great deal with the tooth-ache, and that it was necessary that all the stumps should be extracted. She denied that the defendant had told her that her gums would shrink, and that it would be necessary to alter the teeth later on. Mr. R. Edwards, practising at 22, High Street, explained that plaintiff consulted him about the teeth supplied by defendant, and he found that they would not fit. The upper set would not fit the palate. It was true that the gums of persons who had had teeth extracted shrunk, but not the palate. He advised her to take the teeth back to the defendant, and to tell him that he (witness) said that they were too big and did not fit. It was much against his will that he appeared against a professional brother, but he had been subpoenaed to attend. Defendant explained that he did not agree that it was always necessary to wait months before putting in a set of teeth after extraction, as it was essential that they should be put

in as soon as possible in order to preserve the contour of the face. His Honour said he knew nothing of dentistry. The action was brought to recover a sum of money because the consideration had failed. That meant that it had failed entirely. In this case that was not so. The defendant supplied the teeth, but plaintiff contended that they did not fit. He felt bound to find for defendant, but without costs.

YET ANOTHER DEATH UNDER CHLOROFORM.—Mr. Price held an inquest, on August 11th, at Chorlton-cum-Hardy, on the body of Arthur Williams, aged 28. One of the witnesses, Mr. A. H. Derwent, L.D.S., said deceased suffered from an abscess at the root of the right lower wisdom tooth. The swelling prevented the mouth opening above a quarter of an inch. Witness advised him to have the tooth removed under chloroform. Witness believed the pain would have been too great to allow extraction without chloroform. No other anæsthetic would have so relaxed the tissues as to let the mouth be opened and the tooth be got at. A Juror: Did you tell him it might be fatal? The Coroner: I don't think that would have been wise. But my experience is that deaths under chloroform are more common than they were. Dr. Mumford, who administered the chloroform in order that Mr. Derwent might operate, deposed that he examined deceased's heart and respiration. The heart was healthy; the respiration was impeded by the obstruction in the throat, but otherwise it was good. Witness administered the chloroform by sprinkling it on lint, and then holding it about an inch from deceased's nose. All went well for two or three minutes; and then a strong smell arose from the mouth. He continued the anæsthetic, and deceased, after seven or eight minutes, began to talk freely, and struggled, the usual second stage. Suddenly he sat bolt upright, changed colour, and his pulse stopped. Witness put his hand on the heart, but could not feel that it was beating. He pulled the tongue forward, and supplied artificial respiration and hot cloths to the heart, but without avail. The abscess had gone down, and he formed the opinion that it had discharged inside. That would cause a sudden shock. He died from the effects of the chloroform either directly or indirectly. Witness did not think it possible that he was choked by the

discharge. By a Juror: I take the full responsibility for the administration. It is not on Mr. Derwent. The jury returned a verdict of "Death from misadventure." They believed that the deceased consented to the administration of the chloroform, and that it was skilfully done.

In an interesting report of a collective investigation of infantile scurvy in North America, undertaken by the American Pediatric Society, we find the following paragraph concerning the condition of the gums and mouth :—" In 16 cases it is distinctly stated that the gums were entirely unaffected, while in 313 they were diseased. The degree of involvement varies from slight swelling to great sponginess and even ulceration. The degree and form of the affection in the cases suitable for study may be seen in the following table :—Swelling, absent, 14 ; present, 293 ; sponginess, absent, 27 ; present, 249 ; discolouration, absent, 23 ; present, 259 ; bleeding, absent, 64 ; present, 188 ; ulceration, absent, 101 ; present, 91. The relation of the affection of the gums to the presence of teeth is of much interest. In nearly all the cases of scurvy in this report, teeth were present ; but what influence this has is not quite clear, since experience teaches that, curiously, it is usually the gums of the upper jaw which are most affected, although the lower teeth naturally are the first cut. Statistics on the portion of the gums involved were not furnished sufficiently to allow of conclusions ; but regarding the teeth it is to be noted that of 359 cases suitable for comparison, teeth had already appeared in 314 instances, *i.e.*, 87·5 per cent. ; while in only 45 cases, *i.e.*, 12·5 per cent. were there no teeth. In studying more carefully these 45 cases of scurvy without teeth, we may make the following analysis :—No teeth, gums normal, 21 cases ; no teeth, gums affected, 24 cases. The conditions present in the latter group were as follows :—Swelling, 19 cases ; sponginess, 14 cases, bleeding 5 cases ; discolouration, 17 cases ; ulceration, 4 cases. This is a proof that affection of the gums may occur equally well when there are no teeth as when teeth have developed. The fact that in the great majority of cases of infantile scurvy the presence of teeth and the affection of the gums is associated, depends merely on the fact that the disease generally develops at an age when teeth naturally have been cut.

Abstracts and Selections.

ON A MODIFICATION OF MR. COXON'S METHOD OF PROLONGING NITROUS OXIDE ANÆSTHESIA DURING DENTAL OPERATIONS:

NAMELY, BY MEANS OF A MOUTH TUBE AND CLOSURE OF THE
NARES.

By W. J. McCARDIE, B.A., M.B., B.C.Cantab.,
*Anæsthetist to the General Hospital and to the Dental Hospital,
Birmingham.*

THE recent endeavours to prolong nitrous oxide anæsthesia for the purposes of dental surgery by means of a mouth-tube, nasal catheter, or nose-piece have all tended to supply a very distinct need—viz., an anæsthesia longer than the usual one of about half a minute and perhaps not so long a one as that obtained so easily and safely by the administration of nitrous oxide followed by ether.

I believe that for all lengthy or severe dental operations, especially in cases where numerous teeth or many bad stumps have to be extracted or in cases in which the patient is very young or old or in feeble health and the operation is of more than ordinary severity, three or four full breaths of nitrous oxide followed by a short inhalation of ether is by far the best method of anæsthetisation, for the shock during and after operation is in these cases less than that occurring during or after the administration of gas. The delayed return of consciousness is often of distinct advantage to both the operator and the patient, and the anæsthetist is left with a freer hand to help the dentist, who for his part can with confidence reckon on having plenty of time and is not embarrassed perhaps with anæsthetic appliances.

Last winter, at a meeting of the Society of Anæsthetists, Mr. Coxon, L.D.S., of Wisbech, demonstrated his apparatus for the prolongation of nitrous oxide anæsthesia. It consisted essentially of a mouth-tube made of hard metal with a diameter of about half-an-inch, at one end nearly half curved and at the other made to fit in the place of the face-piece and stopcock of an ordinary gas apparatus. Mr. Coxon warmed the gas before use by passing it through a metal coil immersed in hot water and interposed between the gas cylinders and the gas bag. In administration the patient

was in the usual way put fully under the influence of nitrous oxide, then the face-piece was rapidly replaced by the oral tube, which was inserted into the mouth in such a way that it rested on the back of the tongue, and the free end was in the pharynx pointing towards the side of that cavity. The anæsthetist had of course to keep the tube out of the way of the operator and to arrange that a copious stream of gas was delivered from a fully-distended gas bag and passed on to the pharynx beyond the region involved in the operation and also beyond any collection of blood in the mouth. Mr. Coxon stated that he had often used this method of his devising and had had exceedingly good results from it.

I was much interested in his demonstration and had a metal tube like his made for me, but not regarding the warming of the gas as of importance, in short operations at any rate, even if it be so in long operations, which I think doubtful, I made trial of the method without using any heating apparatus on many patients at the Birmingham Dental Hospital. As I preferred to keep the fullest command of the head and jaws and had to manipulate the gag I asked Mr. Thompson Madin, L.D.S., surgeon to the hospital, to kindly insert the mouth-tube for me and take charge of the gas-bag while I controlled the anæsthesia by means of the gas-supply.

The first few cases of trial were not very successful, but we soon became more proficient, and after a little time the great difficulty—that of inserting the tube to the back of the mouth and at the same time keeping it out of the way of the operator, especially in cases where the mouth was small—was dexterously overcome. We found that a central gag—*e.g.*, Brunton's—wherever it could be used was the best. The gas-bag had generally to be kept fully distended and in the case of strong patients even had to be compressed between the arm and side of the body to increase the delivery pressure. It will be seen that a good deal of gas had to be used, for it escaped both by the mouth and the nose. I constantly for some months used this method in cases which needed a longer administration than usual and had a large measure of success. In many instances the duration of the anæsthesia was only determined by the conclusion of the operation. As the extractions were performed by students much longer periods of anæsthesia than usual were sometimes necessary and times of from one to four minutes were recorded without any untoward present or after-effects being noticed except

that giddiness lasted perhaps a little time longer than after the ordinary sitting. I judged of the degree of anæsthesia chiefly by the colour of the face, managing the supply of gas so that the patient's lips were kept slightly cyanosed and the breathing rather snoring in character. After the above method had been in use for a few months Mr. Madin ingeniously thought of the modification of closing the nasal passages in order to prevent the escape of nitrous oxide and to limit air entry. After closing the nose by manual pressure he proposed to pass the tube just inside the mouth at a corner and to keep it full of gas by using only a moderate pressure. He himself made trial of this plan with perfect success. As the closure of the nostrils by digital compression allows only one hand to be free I had a small nasal clamp made which might be fixed immediately after removal of the face-piece.

This modification of Mr. Coxon's method has been even more successful in our hands than the original plan, and with Mr. Madin's kind help I demonstrated its application at the annual meeting of the Central Counties Branch of the British Dental Association, held at Worcester on July 9th, Mr. Surman of that city being good enough to find a suitable patient. This demonstration very well illustrated the prolongation of anæsthesia by this modified method. The subject, a woman of ordinary type and about 30 years of age, needed the removal of 11 teeth, nine in the upper and two in the lower jaw, including many stumps. After the insertion of a Brunton's gag between the jaws and in the middle line full anæsthesia was induced in the ordinary way by means of Hewitt's apparatus and when the face-piece was removed the oral tube was quickly substituted for it and inserted by Mr. Madin into the corner of the mouth away from the operator, while I manually compressed the nares and allowed a stream of nitrous oxide to pass from a gas-bag kept moderately distended through the tube, endeavouring to merely keep the mouth full of the gas. An uninterrupted and perfect anæsthesia was obtained, characterised by slight cyanosis of the face and lips and by quietly snoring breathing. The mouth tube was so well manipulated that it did not all embarrass Mr. Malcolm Knott, the dental surgeon, who was operating with deliberation, especially in the extraction of the last few teeth. The duration of operation was two-and-a-half minutes, and after it had been finished the anæsthesia was prolonged for another half-minute for the purpose of

further demonstrating the ease of maintaining it as long as might be necessary. During the latter part of the operation the Brunton's gag was changed for that of Mason. The operator would have done very well indeed to have extracted all the teeth in two ordinary sittings for gas.

This was a most successful case for a demonstration, the patient being well under throughout without movement of any kind, slightly cyanosed as regards colour, her breathing being easy and rather snoring in character. The operator was very pleased with the result. Recovery of the patient was extremely rapid and not marked by any untoward symptom—indeed, was exactly like that after the usual half-minute anæsthesia. The quantity of nitrous oxide used was about 48 gallons and supposing that eight gallons (which is perhaps a little above the average for an adult) were used in inducing full narcosis, then only eight gallons were used for each extra half-minute of anæsthesia, a quantity which is considerably less than that used in the same time by Mr. Coxon's original method. For, supposing the nasal passages to remain open and manipulation to be going on in the mouth, there is a tendency for the patient, even in the case of mouth-breathers, to breathe wholly through the nose and the inhaled nitrous oxide is very largely diluted with air in the pharynx, while during expiration and the pause between expiration and the following inspiration there is free vent through the nares for the escape of the gas as well as of air. If the nostrils be blocked much gas is obviously saved, and as possibly some reflex hindrance (induced by the oral interference) to free respiration still exists, the breathing is for a short time at any rate quieter and less frequent, and if the mouth be simply kept full of nitrous oxide it can well be effected that enough gas is inhaled to maintain full anæsthesia, while it is diluted with a not too large quantity of air.

In suitable cases the duration of the anæsthesia may be determined only by the conclusion of operative interference. Where it is possible digital has an advantage over instrumental compression of the nares, in that it gives one more command over the head and can be applied very easily at any period of the anæsthesia, while it is sometimes difficult to quickly apply or reapply a clamp with one hand. One or two chief points for guidance in the use of this modified method have already been indicated, but the last and not the least remains to be noted and concerns the question of an assistant to the anæsthetist. In any dental operation where more

than a few teeth have to be extracted under gas in the ordinary way a dexterous speed is necessary on the part of the operator, and it is often advisable for him to have an assistant who shall help him in the matter of sponging, handing instruments, &c., but if this method of prolonging anæsthesia be adopted the operator can take his time and do his own sponging, and the assistant (if only three persons besides the patient be present) may help the anæsthetist, for it is a very great advantage to have some one to change the face-piece for the mouth-tube and if skilled to insert and manage the tube while the administrator concerns himself with more serious matters, such as the condition of the patient and degree of anæsthesia, the command of the head and jaws, the manipulation of the gag, the closure of the nares, the gas supply, and watches that no blood or foreign bodies be allowed to remain in the mouth. The tube I use has an internal diameter of about half-an-inch, is made to fit my Hewitt's gas apparatus, and can be carried in the pocket. The advantages of the method are obvious. It is extremely simple and adaptable, needing no cumbrous, complicated, or novel apparatus, and can be effectively applied to probably the large majority of patients who can take gas in the usual way, doing away with the need for many a second sitting for extraction, saving time and trouble to both patient, anæsthetist and operator, and also perhaps sparing the patient the mental discomfort of anticipating a second administration. I use the modified method in most cases (at the dental hospital) requiring a longer anæsthesia than usual.

The disadvantage of the method is that it needs some practice on the part of the anæsthetist and also on the part of the assistant, if one be present, to successfully keep the tube out of the way of the operator. I do not think, as I said earlier, that for really long or severe dental operations the original method of Mr. Coxon or this modified one will or ought to replace the administration of gas and ether, but both should hold a place midway between the ordinary gas inhalation on the one hand and the use of gas followed by ether on the other.—*Lancet*.

THE PRESENCE OF ARSENIC IN CEMENTS.

By A. B. HOWATT, D.D.S., Chicago, Ill.

AT a recent meeting of a local society during the discussion of a paper, by Dr. H. J. Goslee, on "The Advisability of Devitalization

in Crowning Teeth," several theories were advanced as to the probable cause of frequent death of pulps under metal caps ; the chief one of which was presented by Dr. J. H. Prothero, who called attention to the fact that arsenic in some form or other was present in most all of the zinc oxide powders prepared by the manufacturers of cements.

This assertion seemed to offer food for thought and opened up a channel through which it is not impossible to attribute the probable cause of the death of many pulps under crowns, in capping operations, and even from ordinary cement fillings, and has induced me to make a series of experiments along this line, the fruit of which will no doubt be as surprising to many of you as it was to me.

Procuring some 12 or 15 samples of various makes and subjecting each very carefully to "Marsh's test," it was found that not one of them withstood the reaction for arsenic ; that none showed the entire absence of it, while many showed it in large and varying proportions.

However, as only a limited time could be given to these experiments, it was not possible to make a thorough quantitative analysis ; yet the deductions reached are based upon the results of a plan which was adopted and carefully carried out, and while perhaps to some slight extent inaccurate, yet sufficiently convincing in general, and will serve to give some conception of the quantities involved.

The test referred to, "Marsh's test," was used exclusively in the experiments which, on account of the difficulties encountered, and for the reason that many perhaps may not be now familiar with it, will be briefly explained in detail.

Into a large mouthed bottle is inserted a double perforated rubber cork through which passes two glass tubes, one of which is a funnel tube, the other a shorter one, and the end of which is tapered to a fine point.

In the ordinary experiments hydrogen gas is generated in the bottle by the action of hydrochloric or sulphuric acid upon metallic zinc, but as it is almost impossible to obtain a specimen of zinc which does not contain traces of arsenic, after repeated trials, metallic magnesium was used in its stead.

When it was found that all of the air had been driven from the bottle, the hydrogen escaping from the fine pointed tube was ignited and the flame tested for arsenic. If the flame was found free the measured quantity of zinc oxide (one gramme) was suspended in

dilute hydrochloric acid and poured into the bottle through the funnel tube, and the resultant flame in each case was allowed to play upon the porcelain for five minutes.

On the porcelain plates will be seen a comparison of the arsenic spot, the one made by the zinc oxide powder, and a spot made by what some of the wholesale chemical houses sell as chemically pure zinc.

It will be observed that the grey powders give a less reaction for arsenic than the yellow, owing probably to the higher heat to which they are exposed in fusing, arsenic being volatile at 400° F. It was also found that different specimens of the same make of cements gave varied results.

Acknowledging these deductions to be conclusive then, in the evidence of the presence of arsenic in cements, it is comparatively easy to ascertain the ultimate injurious effects which must be attributed to the placing of cement in contact with any surface of a tooth not protected by enamel; and to trace perhaps the cause, or at least one cause, of the death of pulps under crowns or cement fillings. If, then, cement in proximity to or in contact with the pulp is an irritant, which is conceded, is it due to the presence of arsenic?

In conclusion, I wish to acknowledge the kind assistance and encouragement given by Dr. Goslee, and to thank Dr. Ames for the specimens of cement submitted by him; and if this paper will be the cause of future investigations along this line the essayist will feel amply repaid.—*Dental Review*.

Reviews.

MECHANICAL PRACTICE IN DENTISTRY, by W. BOOTH PEARSALL, F.R.C.S.I., &c. London: Claudius Ash & Sons. Eighteen shillings nett.

WE must honestly confess that, considered in the light of a text-book on mechanical dentistry, Mr. Booth Pearsall's work is distinctly disappointing. Not only are such common-place essentials as special trays, guttapercha impressions, and the use of stearine for hardening models—to note but a few—utterly ignored, but the principles which underlie all mechanical methods are too often either omitted or simply glossed over. The author would probably readily admit that one of the great drawbacks of our present system of training mechanical pupils is the tendency of the pupil to pick up—by rule

of thumb—a certain method of work, without grasping the “why” and the “wherefore.” Too often a failure is put down to “bad luck,” and the scientific aspect of his work altogether loses both its interest and its value. It is just here that a text-book may become distinctly useful, and the student—or, indeed, the practitioner—may by its help be enabled to grasp those scientific details which *explain* much that has been imbibed unconsciously, and too often ignorantly. To this end such a paragraph as the second on page 67 might have been appropriately edited before publication, for “sulphate of potash” has certainly never been identified as “alum” either “popularly” or otherwise, and neither of them “reduces the shrinkage of the plaster while setting” for the simple reason that plaster of Paris, far from shrinking, *expands*, and expands very considerably, as a simple experiment will at once demonstrate.

There is much to be said for the literal interpretation of the author's plea in the preface that “If some subjects are not included within the compass of this book, they are omitted because they have been dealt with already by other writers”; but it might be retorted that *every subject* treated of by Mr. Pearsall has already been “dealt with” pretty freely, even within the poverty-stricken limits of dental literature. One may excuse any lengthy handling of such a subject as “crowns,” but it is difficult to know why mechanical appliances for the treatment of irregularities have not been deemed worthy even of mention. Had this unfortunate omission applied to the chapters on “Continuous Gum Work” and “Cleft Palate,” the author might have been credited with a larger knowledge than that evidenced. The former chapter is principally a quotation from the work of another, but we doubt whether the result would not have been eminently more satisfactory had Mr. Gartrell been personally responsible for it. The latter is difficult to characterise—even with the sincere desire to be not only fair, but charitable. We prefer to allow the readers of the book to apply the appropriate epithet to a chapter on cleft palate which gives no classification of the conditions to be treated; which confuses congenital and acquired types; which merely mentions a “Kingsley” obturator as a sort of extinct dental dodo, and not even names a “Suersen”—the one appliance of all others found to be practically useful; which appears to illumine a large subject by *two* cases, in each of which—if the illustrations are to be relied on—an apparatus is advocated which is neither scientific nor practical.

We are pleased to be able to turn from the serious value of Mr. Pearsall's work, and note that the book is well got up, and that its literary style is distinctly pleasing, whilst occasionally, a practical point is disclosed, radiant with the genius of the personality of the author. Sometimes, too, a little of the genial humour of the

sister isle coats the scientific crust, as instanced on page 166, where the tragedy of a "windy" cast-iron vulcanizer is graphically told.

The illustrations are on the whole good, some being of considerable artistic merit, but the free treatment of some of the drawings is occasionally far from conducive to the elucidation of the text; an instance of this will be found in Figs. 105 and 106, where what is intended to represent the palatal aspect of a denture appears to show the lingual surface. We doubt the usefulness of the appendix, which too much resembles an illustrated price list of tools, but may at least be grateful for the fact that the usual dental catalogue figures have been relegated to a place of their own. The value of giving plans of various workrooms is decidedly problematic, for the reason that it is more than probable that in the majority of instances the arrangements made have only been in accordance with the facilities available; whereas to have carried out the idea logically, Mr. Pearsall might have given us some of the infamous dens called workrooms often found in garrets and cellars: but then his friends might not have cared to have their ingenuity announced to the professional world in this fashion.

A TREATISE ON PLATELESS DENTURES, by C. A. SAMSOE, with 48 Illustrations. Translated by D. O. BELL. Stockholm: Published by the Author.

WE are afraid this book has been somewhat marred whilst being done into English. The translator is apparently neither familiar with technical terms used in dentistry, nor does the wording bespeak the work of an expert writer.

"Plateless dentures" is the somewhat clumsy term the author uses for what are usually called crowns and bridges, terms themselves, perhaps, open to some objections. The earlier chapters deal with various crowns; then follows a chapter on the treatment of roots and teeth previous to the insertion of "plateless dentures," and finally the chapters dealing with the author's special methods. These we may briefly summarise. The author first prepares the pivot, which is conical, and fits tightly into the hole in the root, the portion beyond the root being bent towards the palate. The tooth is now fitted to the root, the author lays stress on this being done to the mouth, not to a model, then these two are firmly fixed together by means of the cement (composition not stated) which is exceptionally hard. By this means an impression of the root is also obtained. The tooth and pivot are now imbedded in plaster, without admixture, and when set this is cut away so that the cutting edge of the tooth is exposed, allowing this to be removed to clean away the cement. The tooth is now replaced in plaster mould, and the pins (*not the tooth nor the plaster*) moistened with

the soldering acid (composition not stated), over this are placed some "parallelopipeds" (good word this), of a metal prepared by the author, which consists of tin, silver, gold and platinum, "in proportion to make it melt readily and solder well." The piece is warmed, and when the metal melts the piece is tapped gently to shake the metal into place, this being assisted by pressure applied through a little piece of spunk. When cold the crown is filed up and polished. Larger pieces are prepared in a precisely similar way, though sometimes the author advises that the pins of the tooth should be first soldered to the pin or bar between the pins.

Illustrations of models, with larger pieces attached are shown, but we cannot agree that many of these represent cases suitable for this class of work. Seeing that the chief use of teeth is for grinding food, what reason is there in fitting bridges so that the patient has six or eight flat teeth in the front of the mouth and absolutely no teeth whatever at the back of the mouth? Indeed, but few of the models shown seem to us cases in which the application of a bridge is desirable, and we venture to think that the bad repute into which bridge-work has fallen among many excellent men, is due solely to its advocates applying it in cases such as these.

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

THE following list of prize winners should have been included in the account of the prize distribution published in our August issue:—*Senior Medal*—George Reginald Brittan. *Certificates*—W. Gerard Morgan and Campbell H. Baxter. *Junior Medal*—W. Orr Gray. *Certificates*—J. D. Hamilton Jamieson and T. Mathison. *Macgregor Medal* (for the best all-round senior student, decided by the vote of his fellows)—W. Tweedie. *Ezard Medal* (for the best of a series of gold fillings)—George Reginald Brittan. *Dental Anatomy*—J. H. Gibbs (silver medal); W. J. N. Wood (bronze medal); C. H. Baxter (certificate). *Dental Surgery*—R. J. Bellman (silver medal); W. Gerard Morgan (silver medal). *Dental Mechanics*—J. D. Hamilton Jamieson (gold medal); George Reginald Brittan (certificate); W. Tweedie (certificate). *Extra Mural Distinctions*—College of Surgeons (Winter Session)—*Chemistry*—H. Ramage (medal). *Medicine*—A. M'Kendrick and Campbell H. Baxter. *Medical Jurisprudence*—J. H. Gibbs. *Practice of Medicine*—J. H. Gibbs. *Senior Anatomy* (Lectures)—A. Brownlee (medal). *Junior Anatomy* (Lectures)—W. Orr Gray (medal). *Junior Anatomy* (Practical)—W. Orr Gray (medal). *Summer Session*—*Materia Medica*—J. D. Hamilton Jamieson (silver medal). *Practical Anatomy*—J. T. Omit (medal); R. C. Clarkson (medal). *Chemistry*—J. R. Carr (medal).

STUDENTS' SUPPLEMENT.

REGISTRATION OF DENTAL STUDENTS.

THE registration of dental students shall be carried on at the Medical Council Office, 299, Oxford Street, W., or at the Branch Office, 1, George Square, Edinburgh, and 35, Dawson Street, Dublin.

Every dental student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No dental student shall be registered until he has passed a preliminary examination, as required by the General Medical Council* and has produced evidence that he has commenced dental study.

The commencement of the course of professional study recognised by any of the qualifying bodies shall not be reckoned as dating earlier than 15 days before the date of registration.

Students who commenced their professional education by apprenticeship to dentists entitled to be registered, or by attendance upon professional lectures before July 22nd, 1878 (when dental education became compulsory), shall not be required to produce evidence of having passed a preliminary education.

Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies, and of having received three years' instruction in mechanical dentistry from a registered practitioner.

One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study.

Three years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student; but no year of such mechanical

* Exception may be made in the case of a student from any Indian, Colonial, or foreign university or college who shall have passed the matriculation or other equivalent examination of his university or college, provided such examination fairly represents a standard of general education equivalent to that required in this country.

instruction shall be counted as one of the four years of professional study unless taken after registration.

Forms of registration may be obtained at the office of the General Medical Council. No fee is required for registration as a student.

RESOLUTIONS OF THE GENERAL MEDICAL COUNCIL IN REGARD TO THE REGISTRATION OF MEDICAL AND DENTAL STUDENTS.

Preliminary Examination.

1. Subject to such exceptions as the Council may from time to time allow, every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed by the standing resolutions of the Council.

2. No person shall be allowed to be registered as a dental student unless he shall have previously passed a preliminary examination in the subjects of general education as hereinafter provided.

3. It shall be delegated to the educational committee to prepare and issue, from time to time, a list of examining bodies whose examinations fulfil the conditions of the Medical Council as regards general education.

4. Testimonials of proficiency granted by educational bodies, according to the subjoined list, shall be accepted, the Council reserving the right to add to or take from the list.

5. A degree in arts of any university of the United Kingdom, or of the Colonies, or of such other universities as may be specially recognised from time to time by the Medical Council shall be considered a sufficient testimonial of proficiency.

LIST OF PRELIMINARY EXAMINATIONS HELD IN GREAT BRITAIN WHICH ARE RECOGNISED BY THE GENERAL MEDICAL COUNCIL FOR REGISTRATION OF BOTH DENTAL AND MEDICAL STUDENTS.*

Victoria University.—Entrance Examination in Arts ; Preliminary Examination.

* With a few exceptions the Council will not in future accept any Certificates of Pass in Preliminary Examination in General Education unless the whole of the subjects included in the Preliminary Examination required by the Council for the Registration of Students of Medicine have been passed at the same time ; but this rule shall not apply to those who, previous to January, 1892, have passed a part of any Preliminary Examination recognised by the Council.

University of London.—Matriculation Examination.

University of Oxford.—Responsions ; Moderations ; Local Examination (Junior and Senior).

University of Cambridge.—Previous Examination ; General Examinations ; Local Examinations, Junior, Senior, and Higher.

University of Durham.—Preliminary Examination in Arts, for Graduation in Medicine and Science ; Examination for Certificates of Proficiency.

University of Wales.—Matriculation Examination.

Universities of Edinburgh, Glasgow, Aberdeen and St. Andrews.—Preliminary Examination for Graduation in Science, or Medicine and Surgery ; Local Examinations (Junior or Senior Certificate) ; Examination for Degree in Arts.

University of Dublin.—Public Entrance Examination ; General Examination, at end of Senior Freshmen year ; Examination for Degree in Arts.

Royal University of Ireland.—Matriculation Examination.

Oxford and Cambridge Schools' Examination Board.—Lower Certificate ; Higher Certificate.

Royal College of Preceptors.—Examinations for a First or Second Class Certificate (1st or 2nd Division) ; Preliminary Examination for Medical Students.

Royal College of Physicians and Surgeons of Ireland.—Preliminary Examination.

Intermediate Education Board of Ireland.—Junior, Middle, or Senior Grade Examination.

Educational Institution of Scotland.—Preliminary Medical Examination.

Pharmaceutical Society of Great Britain.—Preliminary and Minor Examinations (*pro tanto*).

Scotch Educational Department.—Leaving Certificate in each grade and in Honours.

A list of examinations recognised by the General Medical Council held at Colonial and Foreign Universities and Colleges may be obtained from the Medical Council Office, Oxford Street, W

REGULATIONS OF THE VARIOUS EXAMINING BODIES FOR THE DIPLOMA IN DENTAL SURGERY (L.D.S.).

	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
—PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July, 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W. Twenty-one.	Compulsory on all who commence their Professional Education after August 1st, 1878. This differs slightly from that required by the English College. Must be duly registered. Twenty-one.	Compulsory on all, except those who have passed one equivalent examination. Must be duly registered. Any age, but diploma cannot be granted until he is twenty-one. Forty-five months. (Four Academic years)	Compulsory on all who commenced the Professional Education after August 1st, 1878. Must be duly registered. Twenty-one. Four years.
2—AGE at which the Candidate may present himself	Four years subsequent to registration.	* * For students commencing after October, 1890. One Winter Course. (Six months.)	One Course.	One Winter Session.
3—DURATION OF PROFESSIONAL EDUCATION	A Course of Lectures during not less than six months or one Winter Session...			
4—COURSES OF LECTURES, &c., to be attended at a recognised School:— Anatomy				

	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Physiology	One Course. (Six months.)	Six months.	One Course.	One six months' Course.
Practical Physiology (sepa- rate from above)	Three months' Course.		One Course.	
Chemistry	Instruction in, which must include Practical Chemis- try and Physics.	Ditto (held to embody Metallurgy).	One Winter Course.	Ditto.
Practical Chemistry	One Course.	Three months.	One Summer or Winter Course (including Metal- lurgy).	Three months (includes Metallurgy).
Materia Medica	Instructions in Chemistry, Practical Chemistry and Materia Medica need not be taken in the general hospital and may be taken before registration. * * Attendance at Class Examinations obligatory.	Three months.		Ditto.
Dissections and Practical Anatomy	Twelve months.	One Course of Twelve months (Practical Ana- tomy).	Two Winter Courses (in- cluding Dissections and Demonstrations.	Twelve months (Dissec- tions).
Metallurgy	One Course.		Included in Chemistry Lectures.	One Course.
Surgery	Six months, or one Winter Session.	One Course.		One Course.
Medicine	Six months, or one Winter Session.	One Course.		One Course.
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	Not less than 12 months.	Two Sessions of nine months each.	Not less than six months.

	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Dental Anatomy and Physiology, Human and comparative	Two Courses.	One Course. Twenty-four Lectures.	One Course.	Twenty-four Lectures.
Dental Surgery & Pathology	Two Courses.	One Course. Twenty Lectures.	Two Courses.	Twenty Lectures.
Dental Mechanics	Two Courses. ** Attendance at class Examinations obligatory.	One Course. Twelve Lectures.	Two Courses.	Twelve Lectures or Demonstrations.
Practical Instruction in Mechanical Dentistry ...	Three years under the instruction of a competent Practitioner, or under the direction of the Superintendent of the Mechanical Department of a recognised Dental Hospital, where the arrangements for teaching Mechanical Dentistry are satisfactory to the Board of Examiners in Dental Surgery. In the cases of qualified Surgeons evidence of a period of not less than two instead of three years of such instruction will be sufficient.	Three years under a Registered Dental Practitioner, or in Mechanical Department of a recognised Dental Hospital whose arrangements are held to be satisfactory to the College (3).	Not less than three years under a Registered Dentist in acquiring a practical familiarity with the details of Mechanical Dentistry.	Three years under a Registered Practitioner. Attendance at Hospital (6).

This instruction may be taken prior to the Date of Registration as a Dental Student.

	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recog- nised General Hospitals				
5—FEE... ..	Two Years. £21 over and above stamp duty. For all Students registered on or before October 1st, 1894, £10 10s.	Two years. £4 4s. for First. £6 6s. for Second. Students commencing their studies after October 1st, 1896, £5 5s. for first; £10 10s. for second. Three months. * * No candidate admitted to this Examination who has been rejected by any other Licensing Board within three months.	Two years (7). £10 10s. for First, and £10 10s. for Final. Fees for re-examination £5 5s. each part. Three months.	Two years (7). £4 4s. for First. £6 6s. for Final. Six months. * * No candidate admitted to this examination who has been rejected by any other Licensing Board within three months.
6—LEAST period during which unsuccessful Can- didates are referred to their studies	Six months, subject to the decision of the Board and, before re-examination must produce a certificate of three months' additional study at a general hospital and at a special hospital.	One Examination. (A) <i>First Day (Written).</i> On Anatomy and Phy- siology; and Surgery and Pathology. (Two ques- tions on each. Time two hours.) On Dental Anatomy and Physiology; and Dental Surgery and Pathology. (Three questions on each. Time three hours.)	Two examinations. <i>Primary:</i> <i>First Day (Written).</i> 10 a.m. to 1 p.m. Five questions on Physics and five on Chemistry, including Metallurgy, three on each to be answered. 3 p.m. to 6 p.m. Five questions on Anatomy, and five on Physiology and His- tology, three questions on each to be answered.	<i>Written, Oral & Practical:</i> 1st part—Anatomy, Phy- siology, Chemistry, and Metallurgy.
7—PARTICULARS OF EX- AMINATION		<i>Written and Oral:</i> (4). 1st Part—Anatomy, Phy- siology, Chemistry with Physics.		

Particulars of Examination. —continued	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
(B) <i>Second Day (Practical).</i> (a) On the treatment of Dental Caries, and preparing filling cavities with gold or plastic filling or other material, or other operation in Dental Surgery. [Candidates must provide their own instruments.]	(b) On the mechanical and Surgical treatment of the various irregularities of Children's teeth.	2nd Part—Surgery, Medicine, Therapeutics, and Special subjects of Dental Anatomy and Physiology, Dental Surgery, Pathology, and Dental Mechanics and Dental Metallurgy. Registered Medical Practitioners are examined on special subjects only. There is a Practical Clinical as well as Written and Oral Examination in Dental and Oral Surgery, Pathology and Mechanics.	<i>Primary :—continued.</i> <i>Second Day (Written and Oral).</i> 10 a.m. to 11.30 a.m. (Written). Five questions on Surgery. Three to be answered. 4 p.m. (Oral). 15 minutes in each of the following subjects—Chemistry, Anatomy, and Surgery. <i>Third Day (Practical).</i> Practical Examination in Chemistry and Histology at Royal College of Surgeons. Candidates are examined for at least half-an-hour in each subject.	2nd Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files and Plugging Instruments.
(c) In Mechanical Dentistry.	(B) <i>Third Day (Oral).</i> Fifteen minutes each on Anatomy, Surgery, Dental Anatomy, and on Dental Surgery.		<i>Final :</i> <i>First Day.</i> Practical examination in Clinical Dental Surgery and Practical Operative Dentistry, and Mechanics. Candidates are required to provide their own Instruments and gold for filling.	

Particulars of Examination.— <i>continued</i>	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
		N.B.—The Regulations for Candidates who register after October 31st, 1896, are slightly different.	<p><i>Final—continued.</i> <i>Second Day (Written).</i> 10 a.m. to 1 p.m. Five questions in Dental Surgery and five in Dental Anatomy, three to be answered. 4 p.m. to 5.30 p.m. Five questions in Dental Mechanics (including Dental Metallurgy), three to be answered.</p> <p><i>Third Day (Oral), 4 p.m.</i> Oral Examination, for 15 minutes, in Dental Anatomy and Physiology, Dental Surgery, and Dental Mechanics.</p>	
8—DATE OF EXAMINATION.	May and November.	I. <i>Primary</i> Examinations. April. July.	<i>Primary</i> Examinations. Second Monday in February, May & November. <i>Final</i> on the Tuesdays following.	May and October.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATION. (2). (a) Conditions of eligibility.	N.B.—Candidates who register as dental students after Jan. 1st, 1897, are required to pass three examinations, and the curriculum differs from the above. (See p. 422/3).	II. <i>Final</i> Examinations. Following Thursday. N.B.—Students who commenced their professional education by apprenticeship, before July 22, 1878, are exempted from the Preliminary Examination	Candidates must be registered Dental Practitioners in practice before 1878.	The Second Examination takes place on the two days following these dates.

9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS (<i>cont.</i>) (2).	Royal College of Surgeons, England. For Students Registered before January 1st. 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
(b) Certificates, &c., re- quired.			<p>Certificates of moral and professional character, stating he has been five years in practice, and has not attracted business as a dentist by advertising or other unbecoming practices, signed by two gentlemen holding Irish Medical or Dental Diplomas, members of the B.D.A. or Odontological societies.</p> <p>Name. Age. Address.</p> <p>Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.</p> <p>Professional status.</p> <p>Particulars of Professional Education.</p>	<p>(8)</p> <p>Various undertakings as to Professional conduct, &c., have to be made by the Candidate.</p>

9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS (cont.) (2).	Royal College of Surgeons, England. For Students Registered before January 1st, 1897.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
(c) Manner of Examination For further information apply to Secretary.	F. G. HALLETT, Esq., Examination Hall, Victoria Embankment, London, W.C.	FRANCIS CADELL, M.B., F.R.C.S.E., Secretary and Treasurer, 22, Ainslie Place, Edinburgh.	G. F. BLAKE, J.P., Royal College of Surgeons, Dublin.	ALEX DUNCAN, Esq., Faculty of Physicians and Surgeons, Faculty Hall, 242, St. Vincent Street, Glasgow.

(1.) Candidates who are Members of the College, or who have passed the Examination in Surgery of the Examining Board in England, or who shall produce evidence of having passed the Examination in Surgery for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an examination in Surgery for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in General Surgery or Pathology.

(2.) Candidates who have passed the Second Examination of the Examining Board in England, or who shall produce evidence of having passed the Examination in Anatomy and Physiology required for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in those subjects.

(3.) One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional studies. The three years of instruction in mechanical dentistry, or any part of them, may be taken by the student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

(4.) Candidates who have passed the First and Second Examinations of the Examining Board in England, or who shall produce evidence of having passed the First and Second Examinations of the Scottish Conjoint Board; the third Professional Examination of the Royal College of Surgeons in Ireland; the corresponding Examinations required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from the First Dental Examination.

(5.) Attendance for two years at a recognised Dental Hospital, or the Dental Department of a recognised General Hospital, in which special provision is made for the proper training of Dental Students.

(6.) Practice of recognised General Surgical Hospital required for six months.

(7.) Candidates qualified in Medicine and Surgery are admitted to the Final Examination on producing evidence of attendance in the Special Dental Courses, including Two (instead of Three) Years' Practical Instruction in Mechanical Dentistry; and they are examined on the Special Dental Subjects only. Candidates who have passed the Examination in Anatomy, Physiology and Chemistry, before any recognised Medical Board are exempt from the First Examination.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Regulations relating to the Diploma in Dental Surgery for students who Register after January 1st, 1897.

SECTION.**EDUCATION.**

Candidates who register as dental students after the 1st January, 1897, are required to pass three examinations—The preliminary science examination, the first professional examination, and the second professional examination—and to produce the following certificates before admission to the several examinations :—

PRELIMINARY SCIENCE EXAMINATION.

1. Of having received instruction, at an institution recognised for the purpose, in chemistry, physics, and practical chemistry.

This instruction may be taken prior to the date of registration as a dental student.

FIRST PROFESSIONAL EXAMINATION.

2. Of having been engaged, during a period of not less than three years, in acquiring a practical familiarity with the details of mechanical dentistry, under the instruction of a competent practitioner, or under the direction of the superintendent of the mechanical department of a recognised dental hospital, where the arrangements for teaching mechanical dentistry are satisfactory to the board of examiners in dental surgery. In the case of qualified surgeons, evidence of a period of not less than two instead of three years of such instruction will be sufficient.

This instruction may be taken prior to the date of registration as a dental student.

3. Of registration as a dental student by the General Medical Council, 299, Oxford Street, London, W.
4. Of having attended at a recognised dental hospital and school :
 - (a) A course of lectures on dental metallurgy.
 - (b) A course of practical dental metallurgy.
 - (c) A course of lectures on dental mechanics.
 - (d) A course of practical dental mechanics, including the manufacture and adjustment of six dentures and six crowns.

SECOND PROFESSIONAL EXAMINATION.

5. Of having been engaged during four years in the acquirement of professional knowledge, subsequently to the date of registration as a dental student.
6. Of having attended at a recognised dental hospital and school :
 - (a) A course of dental anatomy and physiology.
 - (b) A separate course of dental histology, including the preparation of microscopical sections.
 - (c) A course of dental surgery.
 - (d) A separate course of practical dental surgery.
 - (e) A course of not less than five lectures on the surgery of the mouth.*
7. Of having attended at a recognised dental hospital, or in the dental department of a recognised general hospital, the practice of dental surgery during two years.
8. Of having attended at a recognised medical school :
 - (a) A course of lectures on anatomy.
 - (b) A course of lectures on physiology.
 - (c) A separate practical course of physiology.
 - (d) A course of lectures on surgery.
 - (e) A course of lectures on medicine.
9. Of having performed dissections at a recognised medical school during not less than twelve months.
10. Of having attended, at a recognised hospital or hospitals, the practice of surgery and clinical lectures on surgery during two winter sessions.
11. Of being 21 years of age.

The certificates of professional study will be required to show that students have attended the courses of professional study to the satisfaction of their teachers.

NOTE.—Professional study prior to the date of registration as a dental student is not recognised except in the case of chemistry, physics, and practical chemistry, and of instruction in the details of mechanical dentistry (see Clauses 1 and 2), and will not be counted under any circumstances in lieu of part of the four years' study subsequent to the date of registration as a dental student, required by Clause 5.

* These lectures may be given either at recognised dental hospital and school, in which case the lecturer must be a qualified surgeon practising surgery, or they may be given at a recognised medical school, and may form part of the course required by Clause 8 (d).

SECTION II.

EXAMINATION.

1. The preliminary science examination consists of chemistry, physics, and practical chemistry, and will be identical with part I of the first examination of the examining board in England. Candidates may present themselves for this examination before entering at a dental school on production of the certificates required by Section I, Clause 1.

A synopsis of the examination in chemistry, physics, and practical chemistry may be obtained on application at the examination hall.

A candidate who shall produce satisfactory evidence of having passed an examination for a degree in medicine on any of the subjects of the first examination conducted at a University in the United Kingdom, in India, or in a British Colony, will be exempt from examination in the subjects in which he has passed.

A candidate referred in this examination will be required, before being admitted to re-examination, to produce a certificate that he has received further instruction in the subjects, to the satisfaction of his teacher, at an institution recognised for the purpose by the examining board, for a period of not less than three months subsequent to the date of his reference.

2. The first professional examination consists of mechanical dentistry and dental metallurgy, and will be partly practical and partly oral. Candidates may present themselves for the first professional examination for the licence after the completion of six months' attendance at a recognised dental hospital and school, on production of the certificates required under Section I., Clauses 2, 3 and 4.

A synopsis of the examination in dental metallurgy may be obtained on application at the examination hall.

A candidate referred in either or both of the subjects of the first professional examination will be required, before being admitted to re-examination, to produce a certificate, in regard to mechanical dentistry, of having received six months' further instruction under the conditions specified in Section I., Clause 2; and in regard to dental metallurgy, a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject, to the satisfaction of his teacher, in a recognised dental school.

3. The second professional examination consists of general anatomy and physiology, general surgery and pathology, dental anatomy and physiology, dental pathology and surgery, and practical dental surgery.

The examination is partly written, partly practical, and partly oral.

The written examination comprises general anatomy and physiology, general pathology and surgery, dental anatomy and physiology, and dental pathology and surgery.

At the practical examination candidates may be examined.

(a) On the treatment of dental caries, and may be required to prepare and fill cavities with gold or plastic filling or material, or to do any other operation in dental surgery. Candidates must provide their own instruments.

(b) On the mechanical and surgical treatment of the various irregularities of children's teeth.

The oral examination comprises the several subjects above mentioned, and is conducted by the use of preparations, casts, drawings, &c.

Candidates may present themselves for the second professional examination on production of the certificates required under Section I., Clauses 5 to 11, after the completion of four years' professional study from the date of registration as a dental student and after the lapse of not less than six months from the date of passing the first professional examination.

A candidate referred at the second professional examination will be required to produce, before admission to re-examination, a certificate of three months' additional study at a general hospital and a special dental hospital, the precise attendances required at each hospital being left to the discretion of the respective hospital authorities.

Candidates who have passed the second examination of the examining board in England, or who shall produce evidence of having passed the examination in anatomy and physiology required for the licence in surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an examination in anatomy and physiology required for a degree in medicine or surgery at a university in the United Kingdom, will be exempt from re-examination in those subjects.

Candidates who are members of the college or who have passed the examination in surgery of the examining board in England, or who shall produce evidence of having passed the examination in surgery for the licence in surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an examination in surgery for a degree in medicine or surgery at a university in the United Kingdom, will be exempt from re-examination in general surgery and pathology.

4. The fee for the diploma of the licence in dental surgery is twenty guineas, and is payable in the following manner, viz. :—

			£	s.	d.
Preliminary Science Examination.	Each admission		3	3	0
First Professional	do.	do.	2	2	0
Second do.	do.	do.	5	5	0

The balance, if any, of the total fee of twenty guineas to be paid on the completion of the several examinations, before the licence is granted.

5. The preliminary science examination will be held in January, March or April, July and October in each year.

The first and second professional examinations will be held in May and November in each year.

Candidates are required to give fourteen clear days' notice of their intention to present themselves for examination.

NOTE.—A ticket of admission to the museum, to the library, and to the college lectures will be presented to each candidate on his obtaining the diploma.

EDWARD TRIMMER, *Secretary*.

9th July, 1896.

THE DENTAL HOSPITAL OF LONDON MEDICAL SCHOOL.

LEICESTER SQUARE.

DENTAL HOSPITAL.

Consulting Physician.—Sir Richard Douglas Powell, Bart., M.D., F.R.C.P.

Consulting Surgeon.—Mr. Christopher Heath, F.R.C.S.

Consulting Dental Surgeons.—Mr. T. Arnold Rogers, M.R.C.S., L.D.S. ; Mr. J. Smith Turner, M.R.C.S., L.D.S.

Dental Surgeons.—Leonard Matheson, L.D.S. ; E. Lloyd Williams, L.R.C.P., M.R.C.S., L.D.S., L.S.A. ; W. B. Paterson,

F.R.C.S., L.D.S. ; W. H. Woodruff, L.D.S. ; A. Clayton Woodhouse, M.R.C.S., L.D.S. ; F. J. Colyer, L.R.C.P., M.R.C.S., L.D.S.

Assistant Dental Surgeons.—C. F. Rilot, L.R.C.P., M.R.C.S., L.D.S. ; H. Baldwin, M.R.C.S., L.D.S. ; H. Lloyd Williams, M.R.C.S., L.D.S. ; W. H. Dolamore, L.R.C.P., M.R.C.S., L.D.S. ; Percy Smith, L.R.C.P., M.R.C.S., L.D.S. ; G. Hern, L.R.C.P., M.R.C.S., L.D.S. ; J. G. Turner, L.R.C.P., F.R.C.S., L.D.S. ; W. R. Barret, L.R.C.P., M.R.C.S., L.D.S. ; Ashley Densham, L.R.C.P., M.R.C.S., L.D.S. ; N. G. Bennett, L.D.S. ; D. P. Gabell, L.R.C.P., M.R.C.S., L.D.S.

Anæsthetists.—Dudley W. Buxton, M.D., B.S. London, M.R.C.P. Lond. ; Frederic W. Hewitt, B.A., M.D. Cantab. ; Carter Braine, F.R.C.S. ; Henry Davis, M.R.C.S., L.S.A. ; George Rowell, F.R.C.S.

Assistant Anæsthetists.—A. S. Bridger, M.D. Edin. ; R. Turle Bakewell, M.B. Lond., M.R.C.S., L.R.C.P. ; Harvey Hilliard, L.P.C.P., M.R.C.S. ; R. J. Probyn-Williams, M.D. Durh. ; H. Bellamy Gardner, L.R.C.P., M.R.C.S. ; George Flux, M.D. Brux.

Demonstrators.—R. Herschell, L.D.S. ; H. W. Austin, M.B., M.S., L.R.C.P., M.R.C.S., L.D.S. ; H. W. Trewby, L.R.C.P., M.R.C.S., and R. F. Freeman, L.D.S.

Medical Tutor.—W. S. Nowell, M.A. Oxon., L.D.S.

Curator of Mechanical Laboratory.—W. E. Fletcher.

MEDICAL SCHOOL.

Dental Anatomy and Physiology. (Human and Comparative)—Charles S. Tomes, F.R.S., M.A. Oxon., F.R.C.S., L.D.S. Eng. ; on Wednesdays and Saturdays, at 8 a.m. (Summer).

Dental Surgery and Pathology.—(Vacant), on Tuesdays and Fridays, at 8.0 a.m. (Summer).

Mechanical Dentistry.—E. Lloyd Williams, L.R.C.P., L.S.A., M.R.C.S., L.D.S. Eng., on Wednesdays, at 5 p.m. (Winter).

Metallurgy in its application to Dental Purposes.—Dr. Forster Morley, M.A., F.I.C., F.C.S., on Thursdays at 5 p.m. (Winter).

Fee for the special lectures and hospital practice required by the curriculum, £50 in one payment, or fifty guineas when paid in two yearly instalments.

All fees are payable on day of entry.

FEES FOR SINGLE COURSES.

Dental Anatomy and Physiology, one course	...	...	£ 5	5	0
„ „ two courses	...	...	8	8	0
Dental Surgery, one course ..	...	...	5	5	0
„ two courses	...	...	8	8	0
Dental Mechanics, one course	...	...	5	5	0
„ two courses	...	...	8	8	0
Metallurgy, one course	...	...	5	5	0
„ two courses	...	...	8	8	0

Qualified medical men or gentlemen holding foreign diplomas to practice in their native country, can receive six months' practical instruction in the hospital, fee 20 guineas.

Students who perform operations for filling teeth must provide their own instruments for the same, the approximate cost of which is £25.

For further particulars apply to the Dean, who attends at the Hospital every Wednesday, from 10 a.m. to 12 noon.

MORTON SMALE, *Dean*.

NATIONAL DENTAL HOSPITAL AND COLLEGE.

GREAT PORTLAND STREET, W.

HOSPITAL STAFF.

Consulting Physician.—Sir W. H. Broadbent, Bart. M.D., F.R.C.P.

Consulting Surgeon.—Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir Edward Saunders, F.R.C.S.

Visiting Physician.—James Maughan, M.D.

Visiting Surgeon.—E. W. Roughton, F.R.C.S., &c.

Dental Surgeons.—Monday, F. Henri Weiss, L.D.S.Eng.; Tuesday, Alfred Smith, L.D.S.Eng.; Wednesday, Marcus Davis, L.D.S.Eng.; Thursday, T. G. Read, L.D.S.Eng., D.M.D.; Friday, W. Rushton, L.D.S.Eng.; Saturday, C. W. Glassington, M.R.C.S., L.D.S.Edin.

Assistant Dental Surgeons.—Monday, Willoughby Weiss, L.D.S.Eng.; Tuesday, Edgar Beverley, L.D.S.Eng.; Wednesday, S. E. Rose, L.R.C.P., M.R.C.S., L.D.S.Eng.; Thursday, A. E. Relph, L.D.S.Eng.; Friday, W. H. Wheatley, L.D.S.Eng.; Saturday, H. J. Relph, L.R.C.P., M.R.C.S., L.D.S.Eng.

Anæsthetists.—Monday, G. B. Flux, M.D.; Tuesday, C. E. Macleod, M.R.C.S., L.R.C.P.; Wednesdays, C. J. Ogle, M.R.C.S., L.S.A.; Thursday, G. Everitt Norton, M.R.C.S., L.S.A.; Friday, James Maughan, M.D.; Saturday, Harold Low, M.A., M.B.Camb.

LECTURERS (Winter Session).

Dental Anatomy and Physiology.—J. W. Pare, M.D.Edin., L.D.S.Eng.

Dental Surgery and Pathology.—A. Hopewell Smith, M.R.C.S., L.R.C.P., L.D.S.Eng.

Dental Mechanics.—Harry Rose, L.D.S.Eng.

Dental Metallurgy.—A. B. Griffiths, F.R.S.Edin., Ph.D., F.C.S.

Practical Dental Surgery.—Geo. Cunningham M.A., L.D.S. Eng., D.M.D.

Surgery of the Mouth.—E. W. Roughton, M.D.Lond., F.R.C.S.Eng.

Dental Materia Medica.—Chas. W. Glassington, M.R.C.S., L.D.S.Edin.

Elements of Histology.—J. Maughan, M.D.

Dental Histology.—A. Hopewell Smith, L.R.C.P., M.R.C.S., L.D.S.Eng.

FEES FOR SINGLE COURSES.

Dental Anatomy and Physiology	...	...	...	...	£5	5	0
Dental Surgery and Pathology	...	...	...	...	5	5	0
Dental Mechanics	...	...	...	...	5	5	0
Dental Metallurgy	...	...	...	...	5	5	0
Practical Dental Surgery	...	...	...	...	2	2	0
Dental Materia Medica	...	...	...	...	5	5	0
Elements of Histology	...	...	...	...	5	5	0
Surgery of the Mouth	...	...	...	...	5	5	0
Practical Dental Histology	...	...	...	...	5	5	0

Fee for the two years' hospital practice required by the curriculum, £15 15s.

Total fee for the special lectures and hospital practice required by the curriculum, £31 10s.

An entrance exhibition, value £15, is open for competition at the commencement of each session.

SYDNEY SPOKES, *Dean*.

GUY'S HOSPITAL DENTAL SCHOOL.

Dental Surgeons.—F. Newland-Pedley, F.R.C.S., L.D.S.; W. A. Maggs, L.R.C.P., M.R.C.S., L.D.S.; J. H. Badcock, L.R.C.P., M.R.C.S., L.D.S.

Assistant Dental Surgeons.—H. L. Pillin, L.D.S. ; R. W. Rouw, L.R.C.P., M.R.C.S., L.D.S. ; A. E. Baker, L.R.C.P., M.R.C.S., L.D.S. ; F. M. Hopson, L.D.S.

Demonstrators of Practical Dentistry.—J. B. Parfitt, L.R.C.P., M.R.C.S., L.D.S.E. ; W. R. Wood, L.D.S.E. ; J. L. Payne, L.D.S.E. ; J. W. Parr, M.D., L.D.S. ; K. W. Goadby, L.D.S.

Anæsthetists.—J. F. W. Silk, M.D. ; F. W. Cock, M.D., M.S. ; H. F. Lancaster, M.D. ; W. J. Scott, M.B., B.S. ; C. J. Ogle, M.R.C.S. ; F. J. Steward, M.S.

LECTURERS.

Dental Surgery and Pathology.—Mr. Newland Pedley.

Dental Anatomy and Pathology.—Mr. Maggs.

Dental Mechanics.—Mr. Rouw.

Metallurgy.—C. E. Groves, F.R.S.

Operative Dental Surgery.—Mr. Badcock.

Anæsthetics.—Mr. T. Bird.

Dental Microscopy.—Mr. Baker.

Practical Dental Mechanics.—Mr. Pillin.

Dean.—Dr. Shaw.

FEEs.

Special lectures and demonstrations, and dental practice only, £50, paid on entrance.

Seven guineas is charged for any further period of dental practice not exceeding six months.

Arrangements cannot be made for short periods of instruction.

General lectures, demonstrations, and hospital practice required for the L.D.S.Eng, £60 paid on entrance, or 30 guineas at the beginning of the first year, and 30 guineas at the beginning of the second year. From these fees a reduction of 12 guineas will be made to students who produce, on joining the school, recognized certificates of instruction in chemistry, practical chemistry, and materia medica.

General and *Special* lectures and demonstrations, and to the hospital and dental practice required for the L.D.S.Eng., may be obtained by payment of £110 on entrance, or of 60 guineas at the beginning of the first year, and 50 guineas at the beginning of the second year. The reduction mentioned above will be made.

The inclusive fee for the M.R.C.S., L.R.C.P., and L.D.S.Eng., is 190 guineas, or if paid by instalments at the commencement of the first year 60 guineas, second year 60 guineas, third year 40 guineas, fourth year 40 guineas.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOL.

Consulting Physician—Alex. Peddie, M.D.

Consulting Surgeon.—Joseph Bell, M.D., F.R.C.S.E.

Fee for the two years' practice required by the curriculum, £15 15s. Fee for each course of lectures, £3 5s.

Consulting Dental Surgeon.—John Smith, M.D., F.R.C.S.E.

Dean.—W. Bowman Macleod.

Dental Surgeons.—Messrs. George W. Watson ; J. Stewart Durward ; Frederick Page ; J. G. Munro ; J. S. Amooore ; David Munro.

Assistant Dental Surgeons.—T. Gregory ; H. B. Ezard ; Robert Lindsay ; J. Alex. Young ; Hume Purdie ; J. Malcolm ; D. Bailie Wilson ; S. Simmons ; R. N. Hannah ; Fred. J. Turnbull ; D. R. Campbell ; H. H. Chapman.

Chloroformists.—Dr. J. M. Farquharson ; W. Lundie ; G. Matheson Cullen ; R. J. Johnston ; Thomas Proudfoot ; Hugh Jamieson.

Tutorial Dental Surgeon.—Mr. J. Morris Stewart.

DENTAL SCHOOL (LECTURERS).

Dental Anatomy and Physiology (Human and Comparative).—Mr. Andrew Wilson.

Dental Surgery and Pathology.—Mr. George W. Watson.

Introductory Dental Surgery.—Mr. J. S. Amooore.

Mechanical Dentistry.—Messrs. W. Bowman Macleod and J. Graham Munro.

Practical Mechanics.—Mechanician, Mr. James Mein.

Conservative Dentistry.—Mr. J. Graham Munro.

Dental Materia Medica.—William Guy, F.R.C.P. and S.Ed., L.D.S.Ed.

Gold Filling.—Mr. H. B. Ezard.

Dental Metallurgy.—Mr. R. Lindsay.

Dental Histology.—Mr. G. W. Watson.

General fee for the Hospital Practice and Special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One course each of dental anatomy, dental surgery, and mechanical dentistry and demonstrations, £9 15s.—£25 10s.

Fees to separate Classes.—Dental anatomy, dental surgery, mechanical dentistry, £3 5s. each.

The hospital practice and lectures qualify for the dental diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other licensing bodies. Second courses of the lectures, as required by the Royal College of Surgeons of England, £2 4s.

General fee for the hospital practice and special lectures required, £25 10s.

For further particulars apply to the Dean, 31, Chambers Street, Edinburgh.

THE GLASGOW DENTAL HOSPITAL AND SCHOOL,

5, VINCENT STREET.

Consulting Physician.—W. T. Gairdner, M.D., Professor of Practice of Physics, Glasgow University.

Consulting Surgeon.—Wm. M'Ewen, M.D., L.L.D., Professor of Surgery, Glasgow University.

Dean.—John A. Biggs, L.D.S.

Dental Surgeons.—The days of attendance are as follows:—Monday, Alexander Whyte, L.D.S. ; A. B. Young, L.D.S. ; Tuesday, John Dunlop, L.D.S. ; Andrew McCash, L.D.S. ; Wednesday, J. M. MacMillan, L.R.C.S. and P.Ed., L.D.S. ; J. C. McCrindle, L.D.S. ; Thursday, W. Wallace, M.A., M.B., C.M., L.D.S. ; John Gardner, L.D.S. ; Friday, R. S. Grant, L.D.S.

Administrators of Anæsthetics.—T. Brown Henderson, M.D., F.F.P.S. ; G. Balfour Marshall, M.D., C.M., F.J.P.S.G. ; R. Home Henderson, M.B.C.M.

LECTURERS.

Dental Surgery and Pathology.—J. M. MacMillan, L.R.C.S. and P.Ed., L.D.S.

Dental Anatomy and Physiology.—W. Wallace, M.A., M.B., C.M., L.D.S.

Dental Mechanics.—John A. Biggs, L.D.S.

House Surgeon.—John G. S. Angus, L.D.S.

Demonstrators.—John Dunlop, D.D.S., L.D.S.Eng. ; Alexander Naismith, L.D.S.

FEES.

The following are the fees payable for the compulsory course of lectures and instruction :—

Anatomy (including Dissection) ...	...	£6	6	0
Physiology ...	...	2	2	0
Chemistry ...	...	2	2	0
Practical Chemistry, with Metallurgy ...	...	2	2	0
Surgery ...	...	2	2	0
Medicine ...	...	2	2	0
Materia Medica ...	...	2	2	0
		<hr/>		
		£18 18 0		
		<hr/>		

The above are the fees payable at Anderson's Medical School and St. Mungo's College.

At Glasgow University the fee is £3 3s. for each subject (except anatomy and dissection, £9 9s.).

For calendar of Anderson's College, apply to Professor A. M. Buchanan, M.A., M.D., secretary to the Medical Faculty, Anderson's College Medical School, Dumbarton Road, Partick, Glasgow. For calendar of St. Mungo's College, apply to Mr. Henry Lamond, Writer, 93, West Regent Street, Glasgow ; and for calendar of Glasgow University, to the Clerk of Senate, the University, Glasgow.

The general hospital practice may be taken either at the Western (within a few minutes of Anderson's College and the University) or Royal (within a few minutes of St. Mungo's College) Infirmarys. The fee for 12 months in either Infirmary is £10 10s.

FEES FOR LECTURES SPECIAL TO DENTISTRY.

Dental Mechanics ...	...	£3	3	0
Dental Surgery and Pathology ...	...	3	3	0
Dental Anatomy and Physiology ...	...	3	3	0
Two years' Dental Hospital Practice ...	...	15	15	0
		<hr/>		
		£25 4 0		
		<hr/>		

The total of the fees payable for the compulsory course of lectures and instruction is £54 12s.

BIRMINGHAM SCHOOL OF DENTISTRY, MASON COLLEGE (QUEEN'S FACULTY OF MEDICINE).

THE teaching of dentistry has been undertaken by the Mason College acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board, so that students may fully qualify themselves for the dental diplomas of the Royal Colleges.

LECTURERS FOR THE DENTAL CURRICULUM.

Dental Surgery.—Frank E. Huxley, M.R.C.S., L.D.S.

Dental Anatomy.—J. Humphreys, L.D.S.I.

Dental Mechanics.—F. Hampton Goffe, L.D.S.

Dental Metallurgy.—Percy F. Frankland, M.D.; W. G. McMillan, F.C.S., F.I.C.

Surgical Diseases of the Mouth.—F. Marsh, F.R.C.S.

Medical Diseases of the Mouth.—Stacey Wilson, M.D., M.R.C.P.

DEMONSTRATORS.

Operative Dental Surgery.—W. T. Madin, L.D.S.

Mechanical Dentistry.—F. R. Howard, L.D.S.

Dental Pathology and Histology.—Dencer Whittles, L.D.S.

General Subjects.—As taught in the Medical Faculty.

COLLEGE FEES.

A composition fee of £50, payable in one sum or in two sums, viz., £25 at the beginning of the first year and £25 at the beginning of the second year of studentship, admits to the full curriculum required for the dental diploma (exclusive of the necessary hospital practice).

Students wishing to take the diplomas of M.R.C.S., and L.R.C.P., in addition to their dental qualifications, pay a composition fee of £75. This covers all college fees.

BIRMINGHAM DENTAL HOSPITAL.

71, NEWHALL STREET.

Consulting Physician.—Robert M. Simon, M.D.

Consulting Surgeon.—John St. S. Wilders, M.R.C.S.

Consulting Dentists.—Adams Parker, L.D.S.; Charles Sims, L.D.S.

Anæsthetists.—S. W. Hayes, M.B.; J. Henry Blakeney, M.R.C.S.; Cyril Hutchinson, M.R.C.S.; Chas. St. Johnston, M.R.C.S., L.R.C.P.; T. Sydney Short, M.B.; W. H. Pooler, M.R.C.S.

Dental Surgeons.—H. Breward Neal, L.D.S.; Frank E. Huxley, M.R.C.S., L.D.S.; J. Humphreys, L.D.S.; F. W. Richards, L.D.S.; A. E. Donagan, B.A., L.D.S.; Frank H. Goffe, L.D.S.

Assistant Dental Surgeons.—W. T. Madin, L.D.S.; P. T. Naden, L.D.S., L.S.A.Lond.; F. R. Howard, L.D.S.; J. Mountford, L.D.S.; J. E. Parrot, L.D.S.

Demonstrators.—A. T. Hilder, L.D.S.; W. Malcolm Knott, L.D.S.

HOSPITAL FEES.

For dental hospital practice and demonstrations—

Composition Students (2 years)	£12	12	0
Non-Composition Students (2 years)	£14	14	0
Non-Composition Students (1 year)	£8	8	0
Non-Composition Students (6 months)	£5	5	0

For general surgical hospital practice, lectures, and demonstrations.

Surgery (2 years) £10 10 0 | Surgery (1 winter) £6 6 0

N.B.—Further particulars may be obtained from the Registrar, at the College, or Mr. J. Humphreys, 149, Edmund Street.

OWENS COLLEGE, MANCHESTER.

DENTAL DEPARTMENT.

PROFESSORS AND LECTURERS. — *Anatomy, Descriptive and Practical.*—Professor Alfred Young, M.B., F.R.C.S. *Physiology.*—Brackenbury Professor Wm. Stirling, M.D., D.Sc. *Chemistry.*—Professor Harold B. Dixon, M.A., F.R.S. *Organic Chemistry.*—Professor W. H. Perkins, Ph.D., F.R.S. *Medicine.*—Professor J. Dreschfield, M.D., F.R.C.P. *Systematic Surgery.*—Professor T. Jones, M.B., B.S., F.R.C.S. *Clinical Surgery.*—Professor Water Whitehead, F.R.C.S.E., F.R.S.E. *Dental Surgery.*—G. G. Champion, L.D.S. *Operative Dentistry.*—G. O. Whittaker, L.D.S. *Dental Anatomy and Physiology.*—W. A. Hooton, L.D.S., L.R.C.P., M.R.C.S. *Dental Mechanics.*—Thomas Tanner, L.D.S. *Dental*

Metallurgy.—C. A. Burghardt, Ph.D. *Dental Pathology and Histology Demonstrator*.—David Headridge, L.D.S.

FEES.—£50, in two sums, at the commencement of first and second year.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

DEVONSHIRE STREET, ALL SAINTS.

Dean.—Mr. George G. Champion.

Consulting Physicians.—Hy. Simpson, M.D.; D. J. Leech, M.D.

Consulting Surgeons.—Mr. E. Lund; Mr. F. A. Heath; Mr. T. Jones; Mr. J. Hardie.

Consulting Dental Surgeons.—Mr. H. Champion; Mr. G. W. Smith.

Dental Surgeons.—Mr. George G. Champion; Mr. Edward P. Collett; Mr. John W. Dunkerley; Mr. William Dykes; Mr. William Headridge; Mr. W. A. Hooton; Mr. P. A. Linnell; Mr. Isaac Renshaw; Mr. William Simms; Mr. Walter Smithard; Mr. Thomas Tanner; Mr. G. O. Whittaker.

Assistant Dental Surgeons.—Mr. H. T. Dreschfeld; Mr. D. Headridge; Mr. F. W. Minshall; Mr. W. H. Norman; Mr. T. C. Sherrate; Mr. C. H. Smale.

Administrators of Anæsthetics.—Mr. Alexander Wilson; Mr. J. W. Smith; Mr. F. Westmacote.

Patients attended at the Hospital from 8.30 to 10 a.m. daily, and on Monday, Wednesday and Friday, from 7 to 8 p.m.

The hospital is conveniently situated for students, being between the Royal Infirmary and Owens College, and only about five minutes' walk from the latter. It contains three separate operating rooms, devoted respectively to fillings, extractions, and operations under anæsthetics and two dental surgeons are in attendance each time the hospital is open.

FEES.

The fee for the two years' Dental Hospital practice required by the College of Surgeons of England is £12 12s., which must be paid in advance, or £8 8s. for the first year and £5 5s. for the second year.

NOTE.—Students are required to provide themselves with the necessary instruments, for list of which see the prospectus of the Victoria Dental Hospital.

LIVERPOOL DENTAL HOSPITAL.**MOUNT PLEASANT.**

Consulting Physician.—Thomas Robinson Glynn, M.D., M.R.C.P.Lond.

Consulting Surgeon.—Frank T. Paul, F.R.C.S.Eng.

Consulting Dental Surgeons.—C. Alder, L.D.S. ; H. C. Quinby, L.D.S. ; W. H. Waite, L.D.S., D.D.S.

Dental Surgeons.—Reg. H. Bates, L.D.S.Eng. ; R. M. Capon, L.D.S.Glas. ; E. A. Councell, L.D.S.Eng. ; R. Edwards, M.R.C.S., L.D.S.Eng. ; W. Maplebeck, L.D.S.I. ; Thos. Mansell, L.D.S.Edin. ; J. Royston, L.D.S.Eng. ; Fredk. Rose, L.D.S.Eng. E. A. Mansell, L.D.S.Eng. ; J. P. Roberts, L.D.S.Edin. ; C. A. Barston, L.D.S.Eng. ; W. J. Pidgeon, L.D.S.Eng. ; W. H. Gilmour, L.D.S.Eng. ; J. A. Woods, L.D.S.Eng.

Demonstrator on Operative Dental Surgery.—

Chloroformist.—J. E. Gemmel, M.B., C.M.

House Surgeon.—

The hospital is conveniently situated within five minutes' walk of the medical school. There are four separate operating rooms and a work-room, all facing north, and there is an abundant daily attendance of patients.

Every facility is afforded to students who are anxious to acquire proficiency in dental surgery, and to prepare themselves for the L.D.S. of any of the licensing bodies.

The electric light has been introduced (the lamps being supported on brackets specially manufactured).

Fee for two years' hospital practice, 12 guineas. Perpetual, 15 guineas.

R. EDWARDS, *Dean.*

UNIVERSITY COLLEGE, LIVERPOOL.**SCHOOL OF DENTAL SURGERY.**

* *Dental Anatomy and Physiology and* * *Dental Histology.*—Professor Paul and Mr. Woods, L.D.S.Eng.

* *Dental Surgery.*—F. J. M. Phillips, L.D.S., M.R.C.S.

* *Dental Mechanics.*—E. A. Councell, L.D.S.Eng.

* *Dental Metallurgy.*—T. L. Bailey, Ph.D.

Dental Pathology.—Professor Boyce.

Practical Dentistry.—The Staff of the Liverpool Dental Hospital.

* Summer Session.

The various medical and dental lectures are given at University College. The anatomical department contains an excellent collection of skulls, illustrative of human and comparative dental anatomy. The dissecting room and theatre are lighted by electricity. The physiological and pathological department enter into occupation of new and spacious laboratories erected by the Rev. S. A. Thompson Yates. These laboratories will be opened by Lord Lister, P.R.S., on October 8th. Fees:—The composition fee for all lectures is £50 in one payment on entrance or in two equal instalments (one half on entrance and the remainder within twelve months); the fee for general hospital practice is £10 10s.

Further particulars can be obtained of

A. M. PATERSON, *Dean*.

DEVON AND EXETER DENTAL HOSPITAL.

Consulting Surgeons.—Messrs. A. J. Cumming, F.R.C.S.Eng.; James Bankart, M.B.Lond., F.R.C.S.Eng.

Consulting Dental Surgeon.—S. Bevan Fox, L.D.S.Eng.

Dental Surgeons.—Messrs. J. T. Browne-Mason, L.D.S.Eng.; Henry Bigging Mason, L.D.S.Eng.; T. G. T. Garland, L.D.S.I.; J. M. Ackland, M.R.C.S., L.D.S.Eng.; T. A. Goard, L.D.S.Eng.; W. H. Goodman, L.D.S.Eng.

Anæsthetists.—John Mortimer, M.B.Lond., M.R.C.S.; Russell Coombe, M.A., M.D.Cantab., F.R.C.S.

DENTAL HOSPITAL OF IRELAND.

LINCOLN PLACE, DUBLIN.

Consulting Physicians.—Sir Francis R. Cruise, M.D.Dub., Consulting Physician, Mater Misericordiæ Hospital; J. W. Moore, M.D., CH.M.Dub. F.R.C.P.I., Lecturer on Practice of Medicine, Carmichael College, Physician to Meath Hospital and Cork Street Fever Hospital.

Consulting Surgeons.—E. H. Bennett, M.D., CH.M.Dub., F.R.C.S.I., Professor of Surgery, University of Dublin, Surgeon to Sir P. Dun's Hospital; Sir William Stokes, CH.M.Dub., F.R.C.S.I., Professor of Surgery, Royal College of Surgeons, Surgeon to Meath Hospital.

Pathologist.—John Mallet Purser, M.D., Professor of Institute of Medicine, University of Dublin, Physician to Sir P. Dun's Hospital.

Anæsthetists.—John G. Cronin, L.R.C.S.I., L.R.C.P.I. ; James B. Coleman, M.D., Ch.M., R.U.I. ; J. Dallas Pratt, M.D., F.R.C.S.I. ; Henry Drury, M.D., F.R.C.P.I. ; Charles J. Boyce, L.R.C.S.I., L.R.C.P.I. ; Michael O'Sullivan, M.B., Ch.B., R.U.I.

DENTAL STAFF.

Consulting Dentists.—R. H. Moore, F.R.C.S.I. ; Daniel Corbett, M.R.C.S.E., L.D.S.Eng. ; W. Booth Pearsall, F.R.C.S.I.

Dentists.—R. Theodore Stack, M.D., F.R.C.S.I., D.M.D.Harv., L.D.S.Eng., Dental Surgeon, Adelaide Hospital, Professor of Dentistry, Royal College of Surgeons ; A. W. W. Baker, M.D., F.R.C.S.I., L.D.S.I., Dental Surgeon, St. Mark's Hospital, University Examiner in Dental Surgery ; Daniel Corbett, A.B., F.R.C.S.I., Dental Surgeon, Mater Misericordiæ Hospital ; George Wycliff Yeates, M.B., Ch.B., L.D.S.I. ; George M. P. Murray, F.R.C.S.I., Dental Surgeon, Steeven's Hospital ; Joseph S. Thompson, L.D.S.Ed. ; Shenstone Bishop, L.D.S.I.

Assistant Dentists.—Kevin Emmett O'Duffy, L.D.S.Ed. ; Vincent Doyle, L.D.S.I., George P. Moore, M.B., Ch.B., L.D.S.Eng. ; G. J. Goldie, L.R.C.P., L.R.C.S., L.D.S.Ed. ; Murray Thompson, L.D.S.Ed. ; W. G. T. Story, M.B., Ch.B., L.D.S.I. ; J. Stanton, L.D.S.I.

Lecturers in Dental Surgery and Pathology.—A. W. W. Baker ; G. N. P. Murray.

Lecturers in Dental Mechanics.—Daniel Corbett, Jun. ; G. W. Yeates.

FEES.

(ALL FEES ARE PAYABLE IN FULL AND IN ADVANCE).

DENTAL HOSPITAL PRACTICE.

* First year	...	...	...	...	...	£15 15 0
* Second year	...	.	...	...	...	12 12 0
† Six Months	...	...	...	...	...	5 5 0
† Three months	...	...	...	...	...	3 3 0

* Each year's Hospital Practice includes one course of lectures in Dental Surgery and Pathology, and one course of lectures in Mechanical Dentistry.

† Courses marked thus are only for Surgeons going to practise in the colonies or remote country districts, or in the Army or Navy.

In addition to the above courses, registered dentists, who are Members of the British Dental Association, will usually be permitted to take out a three months' course for a fee of six guineas.

A. W. W. BAKER, M.D., *Acting Dean.*

MEDICAL SCHOOLS.**BARTHOLOMEW'S HOSPITAL, SMITHFIELD, E.C.**

Sixty-three guineas ; or $31\frac{1}{2}$ guineas ; first summer, $31\frac{1}{2}$ guineas.

CHARING CROSS HOSPITAL, W.C.

Fifty-four guineas, in one sum ; or 30 guineas on entering ; 30 guineas 12 months later.

KING'S COLLEGE, STRAND, W.C.

No special arrangements.

LONDON HOSPITAL, MILE END, E.

Composite fee for dental students £42, exclusive of practical chemistry.

MIDDLESEX HOSPITAL, BERNERS STREET, W.

Fifty-four guineas ; or 40 guineas on entrance, and 20 guineas at the beginning of the second winter session.

ST. GEORGE'S HOSPITAL, HYDE PARK CORNER, S.W.

Exclusive of practical chemistry, £50 ; or in two instalments : first year, £30 ; second year, £25.

ST. MARY'S HOSPITAL, PADDINGTON, W.

£55 ; payable in two instalments :—First year, £30 ; second year, £25.

ST. THOMAS'S HOSPITAL, ALBERT EMBANKMENT, S.E.

£55 ; or by instalments, £50 for the first year, and £10 for the second year.

WESTMINSTER HOSPITAL, BROAD SANCTUARY, S.W.

£50 ; or in two payments of £32 10s. each at the commencement of each academic year.

UNIVERSITY COLLEGE, GOWER STREET, S.W.

60 guineas.

SCHOOL OF MEDICINE, EDINBURGH.

The fees for the general subjects (including practice at the Royal Infirmary) required of dental students, according to the curriculum of the Royal College of Surgeons of Edinburgh, amount to £38 10s.

THE DENTAL RECORD.

VOL. XVIII.

OCTOBER 1ST, 1898.

No. 10.

Original Communications.

NEW DIE MOULDING FLASK AND SWAGER.

By J. H. GARTRELL, L.D.S., Canada.

THIS flask is a modification of the Bailey and Pearsall Moulding Flasks. The method originating in the Bailey flask and greatly improved in the Pearsall, of making a metal die from a shallow plaster model is also adopted in the flask shown in the engraving. The chief novel feature is the form and number of the rings, which are made to approximate to the shape of plaster models. The modification admits of a set of three rings being sufficient for all sizes of models. Fig. 1 illustrates the rings and the method of using them.

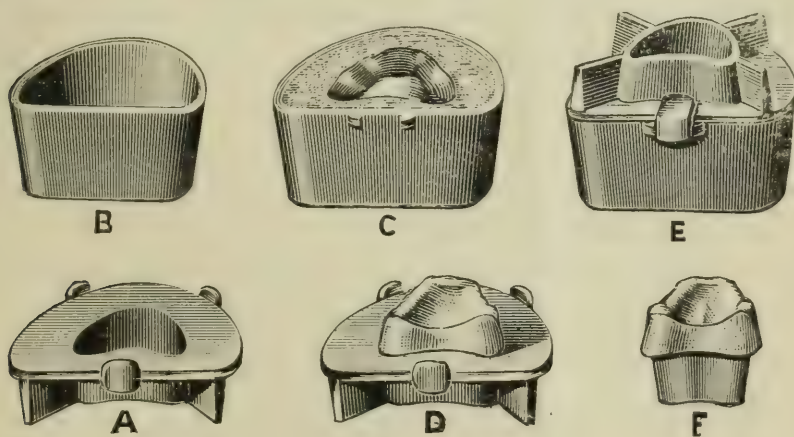


Fig. 1.

A.—Die ring and moulding plate.

B.—Counter die ring.

C.—Sand ring, also used for large counter dies.

To make a die: Place a shallow plaster model over the opening in die ring as shown at D in fig. 1, upon this ring place the sand ring C, and pack the sand. On separating the rings and

removing the model the mould will appear as shown in ring C. Nearly fill the mould with die metal or zinc. The ring D, slightly heated, is then put on C as shown at E, and more metal poured in to fill the opening. At F. is shown the completed die.

The usual method and instruction given in text books is to remove the model from the sand by pulling it out with a handle having a sharp point driven into it, or, as suggested by Mr. Lennox, sticking to the model with wax a heated farthing having another farthing soldered edgewise. A better method in my opinion is to loosen the model by lightly tapping it, then invert the ring holding it in the left hand and repeat the taps if necessary whilst the ring is inverted till the model drops out upon a bed of sand placed to receive it. A model released in this way follows the direction of least resistance and by inclining the mould with these thin plaster models they may even be removed from slight undercuts. The plaster for making models for moulding in sand should never have salt added to hasten the setting, as salt has a great affinity for water and causes the sand to adhere to the mould and drag. This action of the salt will not be prevented even by well varnishing the model.

To make a counter die—place the die F in the ring as shown at D. Paint the die with a thick solution of whiting and water, this should be done whilst the model is hot enough to drive off the water. Place upon D either of the rings B or C, as desired, for a medium or large counter die, and pour in the lead. If it is desired to have a counter die of the palate and top of the ridge only, pack damp sand around the ridge outside before or after putting on the counter die ring.

There are several advantages in adopting these die rings. A shallow model is used, requiring less time to make and dry and can be released from the sand in a direction more advantageous to the matrix. Less metal is used, although the die is stronger, due to the disposal of the metal in a shape best adapted to resist blows or pressure. The dies are symmetrical easier handled and gripped in the vice, and less time is required in preparing them.

Fig. 2 illustrates a method of swaging with these dies by screw pressure, the object being to obtain a dead fit of the plate and avoid the noise of heavy hammering. The press used is the latest form adapted for shot swaging. It is fitted with a handle

42 inches in length, this produces great power, quite sufficient to swage No. 7 gold plate, and being simple and quickly operated, is

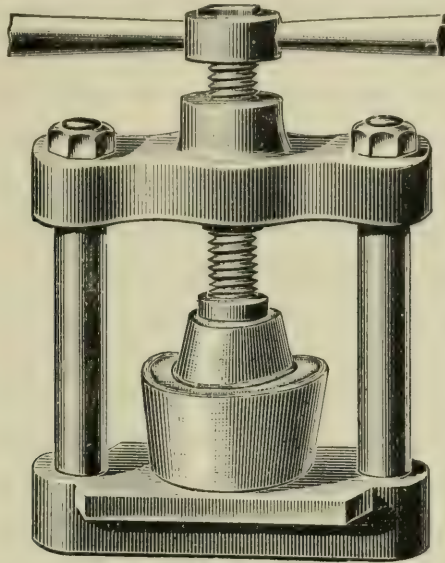


FIG. 2.

more suitable for the purpose than complicated hydraulic and differential screw presses.

INAUGURAL ADDRESS.*

By SIDNEY SPOKES, M.R.C.S., L.D.S.

MR. DEAN AND GENTLEMEN,—I find myself for the first time on the side of those who regard introductory addresses as things to be avoided. The position I find myself in may be accepted with some amount of consolation, inasmuch as it affords one the opportunity of obeying authority not in a matter of belief but for the sake of discipline, and thus setting an example to my juniors. Personally, I have always been, and, after to-day, shall continue to be in favour of the introductory address. It is at the worst a comparatively harmless function for the audience, and the occasional instances where some evidence of exhaustion may appear are more than counterbalanced by those happily frequent, and indeed, usual occasions upon which the address contains the crystallised thoughts of a distinguished man, and acts as a wholesome stimulus to the intellectual student. In such case the audience receives a distinct gain, and the reader of the address has perhaps felt called upon to make a special effort,

* Delivered to the Medical Faculty, University College.

and gives an account of some exceptionally good original work which otherwise he might not have done.

It is a good and convenient way of inaugurating the new session, for the new student and the old student to meet together, and for both classes to join in an academic way with their teachers. For the one who is responsible for the subject matter of the address, the occasion is, no doubt, an onerous one, and the duty will, of course, be discharged with varying degrees of success, depending upon the individual. I have no new thing to tell you; but at all events there is one portion of my duty which does not need much courage to discharge. To those who now enter for the first time the Medical Faculty of University College I can extend a sincere and hearty welcome, and to those others, who, during previous sessions, have already made various degrees of progress along the *viâ medica*, may be expressed the hope that the beneficial effects of rest and recreation during a long vacation will enable them to resume work with the best results. Our students of to-day may congratulate themselves upon their school. We were all proud of it when I listened to my first introductory address in this theatre 27 years ago, and although no doubt the teachers were giants in those days, we may safely say that the succeeding generations of Professors have fully maintained the old reputation of University College. With respect to the hospital, it has always stood in the front rank for its clinical teaching, a fact admitted by other schools, and I venture to say that at the present moment it is second to none. When the new building, now rapidly rising, is completed, we shall have lost that celebrated operating theatre in which Liston and many others have done history-making work down to the present day. Syme said his first visit "strongly suggested the idea of a bear-pit in the Zoological Gardens," but it seems he was alluding more to the enthusiasm of the students than to the architectural structure. We will hope that enthusiasm will not be lacking in the future, and that it will find opportunity for legitimate expression in the wards of the new hospital, which, while not a large one in the number of beds, will at the same time afford ample provision for sufficient clinical material with the best environment that architectural, professional, and expert thought can devise.

The one subject with which we are here to-day unanimously concerned is that of the great healing art. Postulating that the

existence of the medical profession is good for the State, it follows that in order that it might survive, be brought to its highest condition, and be so maintained, two things were necessary—the two things which are necessary in the lives of all human individuals or institutions.

First, that during its infancy it must receive benefits in proportion to its incapacity ; and secondly, that when mature it must receive benefits in proportion to its capacity. Has medicine received these parental attentions ? Its origin is lost in the shades of antiquity, and some of its early ancestry, although very interesting, can scarcely be called ennobling. But at all events, it was human, and dates back to the time when primitive man first struggled above the animal level. We are told that in investigating the state of things then existing, “a satisfactory distinction between priests and medicine-men is difficult to find. Both were concerned with supernatural agents which in their original form were ghosts ; and their ways of dealing with these supernatural agents were so variously mingled that at the outset no clear classification can be made.” Now, according to Mr. Herbert Spencer, when a mythology became sufficiently evolved to have gradations of supernatural beings, the priest usurped [the medicine-man’s functions, and became conspicuous and powerful, and, as you will probably agree, has remained so. May we not speculate in passing, therefore, whether those trephine holes in prehistoric skulls to which Mr. Victor Horsley has drawn attention may possibly have been the work of the usurping priest rather than of the medicine-man, and that the operation was performed with the object of finding the ghosts of dreams rather than to cure epileptic or other abnormal conditions ?

Ruskin has said that man’s proper business in this world falls mainly into three divisions. First, to know themselves and the existing state of things they have to do with. Secondly, to be happy in themselves and in the existing state of things. Thirdly, to mend themselves and the existing state of things as far as either are marred and mendable. Shall we apply these rules to the medical man ? A little retrospection may be a good thing, for is it not well to stop some time or other during the year’s work and enquire how we stand ? What is the existing state of things ?

It will perhaps not be either profitable or wise to speculate *how* the profession of medicine has been left behind by both the church and the law in the race for supremacy in the State, and, indeed, there is some difference of opinion amongst members of our profession as to the advisability of our taking part in any such struggle. At any rate, it cannot be denied that whilst both the church and the law are very strongly represented in the Legislature, medicine is, numerically, without its due recognition, and thus it has come about that our Statutes are much more concerned with commercial and financial affairs than with the value of human life and health. We have recently been told by a good authority that there is in the House of Commons a sort of feeling among a great number of the members that the medical profession is but a refined form of trades unionism seeking rather its own good than that of the public at large. We have also been presented with a valuable prescription for the treatment of the parliamentary endemics of faddism and fanaticism. Professor Roberts considers that the House of Commons requires not a soporific, but stimulants and tonics, and we shall agree with him that such treatment may bring about the results desired, and that "the Legislature will recognise its duties to the profession as the profession recognises its duties to the Legislature.

I think, however, that most of us will also agree that medicine, irrespective of purely political considerations, must continue to rely mostly upon its own good work in order to increase its authority. It has been said that authority is the chief privilege of age, and medicine, as we have seen, has probably a better claim to it than the law if not than the church. This question was discussed it appears at Dublin University in Dr. Swift's time, and gave the witty Dean an opportunity of supporting the side of medicine. He says: "the nicest logicians will allow it a fair way of arguing in all cases, to refer to things what is true as to persons; and therefore, I conclude, if physic be a faculty more ancient than that of civil law, then it literally goes before it, *i.e.*, takes place of it, and I hope it will not be denied that physic is as old as the occasion of it—as old, indeed, within a few days, as mankind; which can by no means be said of the other, in comparison, upstart profession, unless anyone will be so hardy to affirm that there was a Doctor's Commons or Bishop's Court in Paradise. And if any man should

insist to know the year and day of the rise of physic, I take him to be ignorant of religion and history and will disdain an answer, though I could tell him not only what the first distemper was, and that epidemical, viz., a falling sickness, but also who it was that cured it, but I do not think fit to satisfy dulness and ignorance so far." . . . "Place the controversy on another footing and argue from the natural dignity of medicine itself, and the universal use and benefit of it to mankind ; for it is well known that physic has been always necessary to the world and what mankind cannot be without. It has been requisite in all ages and places, which is more than can be asserted in behalf of law, either civil or common."

In spite of such pleading, however, it is difficult to avoid the confession that medicine up to the present has not been able to speak with the same weight of authority as either the church or law, and whilst we may say that the medical profession does not wish to obtain any aggrandisement of a personal nature other than that which enables it the better to fulfil its destiny, we must at the least demand that it shall have full scope for working out its noblest ends, and until this be granted we cannot ignore the necessity for some self-assertion. A recent writer has divided the human race into savages, the civilised and the cultured, assigning to each of these three grades—the lower, the middle and the higher, the lower culture being the term of man's progress so far. But when the middle culture shall have arrived, which the author thinks cannot be expected in less than four or five centuries, it is to be feared that even then there will be a certain proportion of the people opposed to medical progress. For it is not only the ignorant who merely remain indifferent that require instruction. As you know, gentlemen, there are those who have received a liberal education, who from some obliquity of mental vision are not merely unable to appreciate the benefits of medical science, but even feel constrained to actively oppose and obstruct. The recognition of "conscientious objection" should now logically be extended to "peculiar people," and the question indeed arises whether there is any good to be derived from attempting to convince such persons, or whether it would not be wiser to leave them and their descendants to the action of those natural forces which eliminate the unfit. But this suggestion opens up a vast problem. It has been urged that hospital work, and medical skill generally, interferes with the

natural evolution of the race by the preservation and multiplication of the unfit. One has only time for a few words, and perhaps it will suffice to quote passages from Mr. Howard Collins' epitome of Mr. Herbert Spencer's works. He makes two great divisions of Altruism--Justice and Beneficence. Justice implies a sympathetic recognition of others' claims to free activity and its products. Beneficence implies a sympathetic recognition of others' claims to receive aid in the attainment of those products and in the more effectual carrying out of their lives. There are two kinds of beneficence ; one, positive, which implies sacrifice of something that others may be benefited ; the other, negative, which is characterised by passivity at times when egoistic pleasure might be gained by action, and also implies that the most eminent professional men should so restrain their practices, by raising their fees or other means, that everyone consulting them may obtain proper attention, and, indirectly, thus benefit their own health. This, perhaps, may be taken as Mr. Spencer's view as to the advisability of senior consulting physicians and surgeons "taking silk."

In regard to aiding the sick and injured, any member of the family who is suffering from illness or accident should receive solicitous care. It must be borne in mind, however, that those domestic invalids who make undue demands should not receive unlimited attention. Often a whole household is subordinated to the exactions of a sickly member, and such tyranny must be resisted. Concerning that wider beneficence which expends itself in care of sick persons not belonging to the family, it is difficult to say anything definite. Each is rendered more or less special by the character of the patient and the circumstances ; so that general propositions can scarcely find place. There can be no restraint on ministrations to those who have met with accidents. A provident beneficence even suggests acquirement of the knowledge needful to assist sufferers before professional aid can be obtained.

This seems to be the most we can expect from the philosopher bearing upon the subject of preservation of the unfit by medical science, and perhaps we must content ourselves by saying that such treatment is a part of our civilisation, which itself is a factor in evolution. In any case, if it is to be decided by legislation whether a parent is to be allowed to "conscientiously object," or, on the other hand, to be forced to accept parental responsibility, it

must, I think, appear evident that we cannot all rush into the breach and carry on a vigorous political attack. This must be left to the few who, from special personal qualifications and exceptional opportunities, seem more fitted for such work. For the large bulk of the profession nothing remains but to practise their calling honourably, and to use their influence quietly, but not the less effectively, in the more limited sphere of the "common round," and in this way help to educate the public mind. They should, however, keep themselves well-informed as to any new legislation which may affect them, and take favourable opportunity of discussing such things with their fellows.

Another of the existing state of things has to do with our own education. The present scheme is the result of repeated modifications and additions, whilst its cost has continued to increase. It was to be expected that this and the extension of the curriculum to five years would result, at all events at first, in a reduction of the numbers of medical students. The amazing extent to which the bounds of medical knowledge have increased renders the preparation for practice proportionately arduous. The immense strides, for instance, in medical diagnosis call for an extensive acquaintance with chemistry, physics, and the allied sciences, whilst the claims of pathology demand that no relaxation can be tolerated in those more professional studies of anatomy and physiology, the latter of which is continually bringing new ground under cultivation. When we reflect that special qualifications of mind are necessary in order to successfully acquire, apply and adapt all this special knowledge to the best advantage, it becomes clear that the modern student of medicine must be regarded as a highly-evolved product, to be compared favourably with the most advanced of any of the human results of our present civilisation. It is satisfactory to think that the Commission appointed by an Act recently passed will be able to offer an additional reward to the average London student in the form of a University degree. In regard to the sifting machine which presents us with the tested results, the examinations are in this country conducted by various bodies, which are only indirectly responsible to the State. But, so far as stringency goes, I imagine that no one, at all events of those present here, will accuse them of lack of zeal. I am told that it is almost an exception for a man to go through the necessary examinations at the Royal Colleges without

at least one failure at some stage, and that this is considered a sufficiently reasonable explanation for the modern parent or guardian when the unwelcome intelligence has to be transmitted.

The next factor is, of course, the registration by the General Medical Council, and in addressing students one perhaps should be chary of criticism which might arouse any want of reverence for the body which not only controls medical education and registration, but also regulates discipline. Those who are about to enter into practice should naturally feel some interest in the matter, but it is a fact that insufficient attention is given by the general medical practitioner to the election of direct representatives. There is a large proportion of men who, for some cause or another, do not exercise the privilege of voting. Medical men are, no doubt properly, much occupied with their work, and it is notoriously difficult to interest them in professional affairs; but the election of men to represent them on the General Medical Council might surely stimulate them to record a vote on the rare occasions which present. Until they do so, the claim of their brethren to an increase in the number of direct representatives is a little hard to maintain.

One of the most important steps recently taken by the council is the amplification of the rule in regard to "covering." As an almost natural corollary, notice has now been given that a registered practitioner will be liable to proceedings before the council if he knowingly allows unqualified persons to attend or treat patients in respect of matters requiring professional discretion or skill. No doubt an immediate compliance with this decree must lead to considerable inconvenience in many practices, and a good deal of protestation has been manifested. In addition to the dislocation of the work, there is the serious question as to what is to become of the unqualified men, many of them of middle age, with families depending upon them. It has even been suggested that some sort of examination should be instituted with a view of conferring an assistant's qualification, but this would doubtless lead to much confusion in the public mind and at a time when it remains necessary to make matters still clearer than they are. The leader of the House of Commons, in replying to a question on this grievance, said the Privy Council could not interfere, but that the General Medical Council would deal with each case brought before it on its merits. It may probably be safely left thus, and in the course of time things

will so settle down that assistant's places will be occupied by those who, at the expenditure of time, labour and money hold a legal qualification to practise. In this way some of the troubles resulting from over-crowding in the profession may be obviated, whilst a careless, ignorant or indifferent public will, it is to be hoped, learn to appreciate the increased benefit conferred by those who, having given guarantees to the State, should receive adequate recognition.

This leads us easily to the consideration of our direct relationship with State control. Legislation is no doubt a good thing in its way, but it is possible to have too much of it. As an instance may be mentioned the story credited to one of the United States of America. By one enactment it was decreed that no person should graduate in medicine who had not dissected the whole of the human body. Under another law it was forbidden to submit to dissection the bodies of any except executed criminals; and then later a bill was passed abolishing capital punishment. The principal statutes affecting the medical profession number between forty and fifty, and, as might be expected, not only deal with the various offices and emoluments open to the profession, but are also concerned with the pains and penalties which a breach of duty or neglect of legal obligations may render a man liable to.

Quite recently we have had an opportunity of observing the value which is placed upon medical authority and expert opinion by the passing of the Vaccination Act. In spite of weighty official representations as to the necessity for vaccination, the conscience clause was accepted by both Houses. But the impression left upon one's mind by the discussion was that the majority did not really dispute the value of vaccination, but from some reason or another succumbed to the views of so many of their constituents and Boards of Guardians throughout the country. Curiously enough, 27 years ago a select committee recommended that no more than two penalties should be imposed for the same child, and that was adopted in the bill which then passed the Commons. In the Lords, however, whilst seven voted in favour, eight were against the clause, and the bill was lost by this one vote. In regard to the present Act, whilst we may express gratification at the protest by the House of Lords, I think we need not on the whole feel too much regret at the new legislation, especially if supplemented by an insistence upon re-vaccination. Without going

into the question of "liberty of the subject" and "conscientious objection," one may recollect the unpleasant task it always was to vaccinate the offspring of an unwilling parent. There is still one danger remaining under the new Act which seems to have escaped attention. In spite of improved lymph, I venture to prophesy that there will still occur occasional instances of "bad arms." As in the past, certain ignorant mothers will endeavour to rub the lymph away directly the operator's back is turned, and the fact that vaccination is now to be performed in the private dwelling house instead of a public station, will, in my opinion, conduce quite as much to the introduction of other inoculation than vaccinia. In any case, the anti-vaccinators have now provided the nation with a monster experiment upon the living subject, which, whilst not needed by the majority, will be none the less interesting to watch, from the ratepayers' point of view if from no other.

Let us conclude our brief sketch of the existing state of things by a more pleasing reference to the new army regulations for the medical service. The number of army surgeons is slightly over 800—too small probably, but their recognition now as something better than "camp-followers" reflects honour on the profession to which they belong. The formation by warrant of the Royal Army Medical Corps, will do something towards giving the surgeons a proper standing; they have, I believe, a larger proportion of Victoria Crosses than any other arm of the service, and will doubtless continue to maintain the high reputation for devotion to duty which army doctors have always held.

Can we, then, take Ruskin's advice and be happy? I think so, but it is of course a question each will answer for himself. That we are not completely satisfied and content need not make us unhappy. It is said that the happiest man is he with the least ambition and therefore with the fewest disappointments. That is not the kind of happiness the medical profession should enjoy, and we may perhaps remember that our text allows us to alter the existing state of things so far as they are "marred and mendable." There is no difficulty in framing a list of needed improvements; one is embarrassed only at having to select examples. It goes without saying that it is easier to make a retrospect than to project one's ideas into the future; it is easier to study history than prophecy, and perhaps more useful. What has happened in the

past is more or less authentic and can be discussed from the standpoint of to-day. On the other hand, that which is to happen is always felt to be more or less shadowy and indistinct, and perhaps fails to interest one from the strictly practical aspect. And yet, such is human vanity ; or to put it more charitably, such is the feeling of duty to one's successors that a large number of people are actuated by the belief that they have the moulding of the future in their own hands.

Leaving on one side the question of representation in Parliament and at the General Medical Council, to which allusion has already been made, I would suggest that one of the great necessities in the future is a continuance of the struggle to keep the practice of medicine upon professional lines. It is essential that the patient should feel that he is being treated by one whom he may trust to do the best for him with the least possible admixture of the commercial spirit, whose diagnosis, treatment and prognosis run no chance of being vitiated by any ulterior motive of increased pecuniary gain. With these objects in view it might be well, for instance, that as far as possible the medical man should dispense with dispensing, and that the supplying of drugs should be left in the hands of pharmaceutical chemists, who may properly claim by their training to do this work. I know that in some country districts it is impossible, and that in some particular cases the patients themselves might prefer the present method. But I think the time has come for the medical practitioner to charge his fee for the actual attendance and skill, and not for supplying material. The sweating of medical men by certain medical aid societies is another phase of commercialism for which it must be hoped some remedy can be found.

Passing from this subject one may next notice the existence of unqualified practice by absolutely irresponsible persons, which brings much discredit. Nothing short of preventing unregistered persons practising "for gain" is, I am afraid, likely to stop this, and even then, unless there is some amendment of the Companies Acts, there would be an opportunity for escape. Many are not aware that under the present Act an unregistered man who has been successfully prosecuted can proceed with the help of a half-a-dozen relations to "turn himself into a company," and as such may legally do exactly the same thing which was illegal for him as

an individual. This is perhaps the most "marred and mendable" thing before us, and fortunately there is reason for thinking that the present government intend to deal with it.

In regard to the question of public health, may we not hope that before long a minister may be charged by the government with full control and responsibility in the conduct of this vast service? By a combination of districts, medical officers of health should be appointed as such, and debarred from private practice. The work to be properly performed, requires special and expert knowledge and training, and there are several reasons why the officer should not be in general practice, although some previous experience of that would be an advantage.

The question of coroners' enquiries affords another instance where some change would probably be beneficial. The fact that the jury is empanelled to ascertain the cause of death would surely lead one to think that medical evidence or direction was necessary in every case. A medico-legal coroner is apparently the best for the work, and there would be no lack of medical men willing to undergo the necessary amount of legal training if this matter ever receives the attention it deserves.

Time bids me cut short our list of grievances, because I wish to close with a few remarks of a more personal nature to old and new students. To the latter I would say:—Get rid as soon as possible of the idea that lectures are a waste of time. Do not neglect the auditory pathway by which information can be conveyed. But do not, on the other hand, rely alone upon the lecture; indeed, it is a good plan to read a text-book in advance, and then to take notes of the principal headings of the lecture, to be elaborated afterwards. Study well any graphic illustrations the professor may present by diagrams, and you will, by a combination of ear, eye and hand, find yourselves able to reliably register in the brain the facts presented to you.

The majority of old students are probably thinking of going into general practice, and as one who has been through the mill I venture to address them. I commenced with a pupilage in the country, and although the times are out of joint for a continuance of that system, it had many advantages. The first lesson was upon the necessity of professional secrecy. One soon saw the wisdom and utility of the Hippocratic oath, and learned to appreciate

William Cowper's saying that "Confidants in general are like crazy fire-locks, which are no sooner charged and cocked than the spring gives way and the report immediately follows."

Much is required of the modern practitioner by an exacting public. A confession of ignorance is sometimes necessary, although this requires some pluck and is misunderstood by parents and friends, who expect a doctor to know everything connected with the human body: that he should be able to work miracles and not require a holiday. He must be prepared to deal with everything, from advising on the dangers or advantages of cycling to the examination for life insurance. Indeed, one could almost be serious in saying that of course the intelligent practitioner will have made himself acquainted with the arguments and experiments of Professor Schenk, for he must now be prepared to stand an examination by the British matron upon the subject of the determination of sex. The authorised English translation (under the supervision of a London physician) is advertised and noticed, I am told, in the ladies' journals, and there will be many mothers anxious to try the experiment of securing a son under the guidance of the family medical man.

Before entering upon practice it is an advantage to make a voyage or expedition; it gives a wider view of men and things, although some argue that it makes it difficult to settle down afterwards. But, as Hazlitt said, "You will bring with you from your books and solitary reveries a wrong measure of men and things unless you correct it by careful experience and mixed observation," but this advice should have the emphasis on *careful* experience, and should not be taken as an excuse for making observations of *too* mixed a character.

Those students, sons of medical men, going back to practise with their fathers, should let them down lightly and not fire off all their lately acquired knowledge to the disparagement of their progenitors.

Do all that is possible to secure and maintain a good feeling with fellow practitioners. Nothing makes matters go easier than a real friendship with others similarly situated.

With respect to a "good bedside manner," if it is natural so much the better, but something may be done to cultivate it without affectation. Lord Chesterfield was of opinion that manner is of more importance than matter, and most of us can possibly recall

instances where this seemed to hold good in the practice of medicine. To quote Hazlitt once more : ' Gravity is one great ingredient in the conduct of life, and perhaps a certain share of it is hardly to be dispensed with. Few people can afford to be quite unaffected. At any rate, do not put your worst qualities foremost.' At all events none of you, I am sure, will wish to imitate that personage of whom Tourguéneff said, "He had the air of his own statue erected by national subscription."

Those within reach will no doubt avail themselves of the excellent arrangements now made for "post-graduate" instructions, and they have also the advantage of getting the aid of the consultant in serious cases. This relief in responsibility is more often denied to the remote country practitioner, who should, I think, be considered himself as a specialist of specialists, and be an exceptionally strong man.

In these days of anæsthetics, provincial practitioners should be prepared to administer them with the confidence begotten of practical experience ; and certainly they will do well to make themselves as expert in the use of nitrous oxide as is the dentist. The latter sometimes complains that at present he has really to administer the gas whilst the family doctor can merely sit on the window-sill and look on.

To all I would recommend an early attendance upon midwifery cases. When once summoned you will not feel comfortable until a visit has been paid, and when once it is recognised that such is your rule, and that it is unnecessary to give a long warning to ensure attendance, it will be found that false alarms will not occur so often, and any leisure time thus gained can be legitimately enjoyed.

Another point of importance is to have a good knowledge of children's diseases, a matter too often neglected. It is not too much to say that the young practitioner who can show he is a capable obstetrician, and understands the treatment and right feeding of children, has the best of introductions to general practice and it will be his own fault if he does not become the trusted family attendant on all occasions when one is required.

Do you ask me what is the reward for your efforts ? I think not ; neither is it necessary to speak of punishment for failure. No hope of "making a fortune" has led your footsteps into

medicine. An honourable competence in return for a conscientious and self-denying life well spent in the service of your fellow-creatures is what you aspire to, and no eloquent quotation as a peroration to my remarks can add to your zeal. But in the name of the Medical Faculty of University College I can assure you all of their best wishes for your success.

SOME MINOR DETAILS IN GOLD FILLING.

By MR. ROBERTSHAW.

MR. PRESIDENT AND GENTLEMEN,—It may be taken as an axiom that perfection in gold filling cannot be attained without a large amount of care being given to those minor details of which one is forcibly reminded by one's own failures, and by the failures or weak points one sees in the fillings of even expert operators. I have seen, as a student and in private practice, few perfect and many imperfect gold fillings; personally I have not been able to satisfy myself even with a simple cavity, but one learns from one's failures, and as students we have the double advantage of being able to discuss those failures with some of the foremost men in our profession, and also with our fellow-students. Whatever we do for the comfort of our patients, particularly in private practice, is not lost. We must have scrupulously clean hands and instruments; patients worth having will insist on this, and patients worth having are worth keeping. Keep your surgery at an even temperature; if it is too hot, it interferes with your own work; if too cold, you will find your patient irritable. I have found a good method, particularly in a draughty room, is to throw a rug over the knees of your patient; your patient is grateful, and thus you are repaid for your trouble. Next see that the head and back rests are perfectly comfortable; in the case of lady patients we shall at times find it difficult to attain this, owing to the different fashions and modes of making up the hair. After the patient is comfortably seated, thoroughly examine the teeth, and make up your mind what you are going to do before commencing. It is, to say the least, irritating to put a difficult gold filling in, say a distal cavity of a central tooth, and afterwards decide to cut off the lateral on the same

side for the purpose of crowning. Having sufficient room for filling the teeth and finishing the filling is the next consideration. If we decide to divide the teeth, we must not make a mistake of trying to divide several neighbouring teeth at the same time, or the result will not be satisfactory. There are of course several methods of dividing teeth. I shall not discuss the separator, as I do not believe in it, except in cases where patients have come from a distance and can only make one visit, in which case there are several, of which I believe Perry's is generally considered to be the best. Of the gradual methods, cotton tape, rubber, cotton wool, guttapercha, &c., are recommended, the first of which I invariably use, the tape imbibes moisture and after a few hours swells, slightly separating the teeth, and it has this advantage that you can instruct your patients to renew the tape themselves each day until they get four or six layers between the teeth. After this has been done until the teeth are sufficiently divided, there will probably be a certain amount of sensitiveness about the teeth, in which case it is sometimes advisable to put a little temporary guttapercha between the divided teeth until the inflammation is reduced. On the next visit of the patient, assuming that there is little or no sensitiveness, proceed to cut the cavity, breaking down all overhanging edges unsupported by dentine with enamel chisels and sharp fissure burs, clear away all soft tissue with sharp excavators, smooth the edges with sandpaper discs, and put on the rubber-dam, fastening with retractors. Some operators prefer to do this before commencing with the cavity, but it has disadvantages which should not be lost sight of, not the least of which is that you are liable to tear the rubber with the sharp overhanging edges of the tooth. To put on the rubber to one's satisfaction at times requires a certain amount of patience; especially is this the case with beginners, do not be in a hurry, and above all do it thoroughly, taking care to let it embrace a large enough number of the adjacent teeth so that it will neither obstruct the light, nor be in the operator's way during the remainder of the operation. See that the rubber is pushed between the gum and the neck of the tooth. I have often found that students wishing to save the patient's some pain, refrained from tying this as well up as it should be, with, in most cases, disastrous consequences to both himself and patient, saliva finding its way to the filling before he has half finished it.

A difficulty which is frequently met with is the intrusion of the gum into the cervical edge of the cavity, so as to render difficult and very painful the adjustment of the rubber ; the excess of gum may be burnt away with a minimum of pain by means of sodium ethylate ; or after two or three paintings with cocaine, violence may be done to it without much if any pain, when it is not desirable to pack it out by means of cotton wool, which would involve the postponement of the operation to another day. If a jaw from which the soft parts have been removed be examined, it will be seen that a triangular space separates the necks of the teeth, the base being formed by the alveolar process, and the apex of the triangle by the conveyance of the mesial and distal surfaces of the contiguous teeth. The interval so produced is occupied by the gum, and our object is to prevent its bleeding and at the same time to move it from the edge of the cavity. To accomplish both purposes it is necessary to take a strip of soft wood, such as willow, and cut or file it into a triangular rod. When reduced to a suitable size, introduce it by a steady pressure between the teeth, taking care that the basis of the triangle corresponds to the edge of the alveolar process ; by this means the gum will be pressed up against the latter part, the bleeding will be stopped, and the cavity of the tooth fully exposed to view. The introduction of the wood will occasion a little pain at the moment, but it soon gives way to mere uneasiness.

After the rubber has been put on to your satisfaction, place a d'oyley underneath, that is, between the dam and the chin. This is not only duly appreciated by the patient, but will also tend to the successful completion of the filling, as anything which places the patient more at ease, also aids the operator. It is not necessary for me to say how I should prepare a cavity, as we have each as students adopted pretty much the same methods ; but one thing I do wish to impress upon all, and junior students in particular, and that is that time spent in preparing a cavity is time well spent, and a cavity well prepared and well shaped is in my opinion a cavity half filled. Get free access to the cavity so that all parts can be plainly seen, either by direct or reflected light, preferably of course from the palatine side ; but it is far better, if necessary, to sacrifice some of the labial wall than to court failure in the dark. Avoid all sharp angles or deep pits, make sure the margin will be free so as to be easily kept clean when the teeth return to the natural position. Before packing

in the gold, polish the edges with a fine strip, for a much closer adaptation of gold can be made to a smooth surface than to a rough one. Just a word or two on starting pits; if a cavity is properly prepared it is only in rare cases that starting pits are required; as these starting pits seem to be more than a good many students can manage with confidence, let me impress upon you that they are not retaining pits, as they are often called, but merely for the purpose of getting a solid foundation for the gold; they are made by drilling with a small bur into the dentine at the cervical edge until the bur is covered, then enlarge the cavity somewhat before withdrawing the bur. It is advisable to make two of these at the cervical margin and join the two, their direction being such as to carry them between the pulp and the enamel, approaching neither too closely. An opposing joint should be made at the cutting edge of the tooth.

In inserting gold into a cavity every man has his own fancy; personally I am an advocate of hand pressure where possible, as anyone who has cultivated strength in his fingers with that peculiar motion known to the hand worker, and the drop of the wrist, can properly impact gold without mechanical adjuncts. Small pieces and small points should be used, especially for cohesive filling, first fill any starting pits and join them, then take care to fill all angles and difficult parts while they are accessible, bring your gold a little over the edges of the cavity, contour your filling so that the gold, and not any portion of the tooth comes in contact with the next tooth. One great failing in putting in gold is that operators do not put the force in the proper place: this is most important, all the force should be applied to the sides of the gold, not only this, but the ends of the sides should receive the point of the plugger first, for if you use the mallet in the centre before the ends of the side, you will surely find your gold will roll. In applying all the force to the sides of the cylinders we are compressing together parallel layers of foil, and can succeed in making a comparatively solid plug, whereas if we attempt to condense by compressing their ends they at once become knotty and hard. In finishing a filling, if the gold is cohesive little impression can be made on it by burnishing, but in a non-cohesive filling, the filling should be burnished, taking care to do this towards and not from the edges of the cavity, then use discs and strips, let these be small, as the shape of the contour is often spoiled by the injudicious use of broad strips and discs. One other thing let me

impress upon you. In using the disc do not allow it to remain on the filling too long, as it causes a pain which is surprising, and is not easily understood, to one who has not had it used on his own teeth.

Reports of Societies.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

THE Annual Meeting was held in the Medical Institution, Mount Pleasant, on Tuesday, April 19th, 1898.

The PRESIDENT (Dr. Waite), was in the chair, and there was a fair attendance of members.

The HONORARY SECRETARY read the minutes of the last meeting, which were confirmed.

The PRESIDENT called upon the Honorary Treasurer for his report. It showed the society to be in a satisfactory financial position.

The PRESIDENT then called upon the Honorary Secretary for his report.

Dr. WAITE proposed and Mr. F. ROSE seconded the adoption of the reports, which was carried.

The PRESIDENT announced that in accordance with the bye-laws three of the Council had to resign this year, and were not eligible for re-election.

Ballot papers were passed round and the result of the voting showed that Messrs. Waite, Osborn, and Gilmour had been chosen to fill the vacancies.

Mr. EDWARDS proposed and Mr. F. ROSE seconded the resolution: "That the first meeting of the next session be held at Southport." This was carried unanimously.

Mr. DICKINS proposed a very hearty vote of thanks to Dr. Waite for all his help and guidance to the society as its first president. This was seconded by Mr. WOODS who also bore willing testimony to the excellent qualities of their late President. This, on being put to the meeting, was carried with acclamation.

Dr. WAITE, in reply, said it had given him great pleasure to be at the meetings, and that he hoped still to attend fairly often.

The Officers and Council will be as follows for the session 1898-99.

President:—J. S. Dickin, L.D.S.I. *Vice-President*:—T. Mansell, L.D.S.Ed. *Hon. Treasurer*:—E. J. M. Phillips, L.R.C.P., M.R.C.S., L.D.S. *Hon. Librarian*:—L. J. Osborn, L.D.S.Eng. *Hon. Secretary*:—J. A. Woods, L.D.S.Eng. *Council*:—E. A. Councell, L.D.S.Eng.; R. Edwards, M.R.C.S., L.D.S.Eng.; F. Rose, L.D.S.Eng.; W. H. Waite, L.D.S.I., D.D.S.Phil.; L. J. Osborn, L.D.S.Eng.; W. H. Gilmour, L.D.S. Eng.

News and Notes.

A NEW DENTAL SOCIETY.—A meeting of dentists interested in school work was recently held in London, the result being the formation of a new society, which is to be called "The School Dentists' Society," Mr. Sidney Spokes is president. Council—Messrs. W. M. Fisher, W. T. Elliott, A. E. Baker and R. E. Nicholls. Treasurer, Mr. Vernon Knowles. Hon. Secretary, Mr. W. J. Fisk, of Watford.

It may not be generally known that the transmission to a drill of a rotary motion by means of a spiral shaft, such as is used in many dental engines, was as far as is known first used by Nasmyth, of steam-hammer and much other fame. The idea occurred to him whilst he was with the celebrated engineer Henry Maudslay. Some holes having to be drilled in an inaccessible portion of machinery, Nasmyth suggested the use of this spiral spring to Maudslay, and the work was duly and efficiently carried out. This was in the year 1829. Apparently he used this method many times subsequently, for he says it "proved of essential service in other important applications." It would be interesting to know whether the adaptation of this principle to the dental engine was a new idea, or whether it really was essentially a copy of Nasmyth's drill. Certainly Nasmyth's drill must have been seen by many hundreds of workmen at Maudslay's and at his own works, the Bridgewater Foundry, and so have become widely known. Nasmyth many years after made the acquaintance of a dentist's drill, and describes it as "merely a replica of my flexible drill of 1829."

THE use of the term "wisdom tooth" is a very ancient one. It appears to date from the writings of Avicenna, who lived about the year 1000. Is it possible that a recent writer adopted the *nom de plume* "Dens Sapientiae," because it was as ancient and almost as meaningless as his pathology. Still, we should not have referred to the matter only this writer quotes the case we recently mentioned in our Notes of a man who died of pyæmia following a dental lesion as an instance of Reflex Action!! Yet some urge that the dental curriculum should not concern itself with medical subjects. This may be taken as a type of the curious literature we shall be treated to should this evil day ever arrive.

AN idea for making artificial noses that seems well worthy of trial is described by Herr Walther Bruck, of Breslau, in the *Monatsschrift*. Having obtained a cast of the remains of the nose and of the surrounding parts, a model of a suitable nose is carved to this and duplicated in zinc or lead. This is painted over with gum arabic and then a layer of damp kid leather is smoothly laid on. A piece of white transparent celluloid 1—2 millimetres in thickness is softened in acetone and is then carefully pressed to shape on the model as prepared. When the celluloid has hardened the latter can be readily torn away from it. But should, because of the latter drying, the celluloid have become separated from the model, it can readily be pressed into place if it be softened by slightly warming the model. When cold the celluloid nose is trimmed to shape, its edges are trimmed and the surface gloss is removed by rubbing it over with powdered pumice. Gold springs are attached to the portion between the anterior nares, these carry small ivory plates which grip the remains of the septum. The springs are fastened to the nose by celluloid dissolved in acetone. When finished the nose is handed to an artist, who paints its under surface to match the complexion of the face. Herr Bruck claims that the colour seen through the celluloid produces a most natural appearance.

INCIDENTALLY this author lays stress on forming the nose in harmony with the face, and advises an inspection of photographs taken before destruction of the natural organ. *Apropos* of this, the following yarn, told by H. R. Andrews, in the *London Hospital*

Gazette, is not without point. He heard the story at Aden :—
“ There was a very pretty girl who got some horrible disease, which destroyed her nose and puckered up her face. Her mother took her to the London Hospital, and one of the surgeons promised to give her a new nose and repair her face generally, if she would come into the Hospital. This seemed to the girl almost too good to be true, but she went into the Hospital, delighted at the prospect of being made beautiful once more. Before the operation, the house-surgeon wrote to the girl’s mother, asking for an old photo of the girl to be sent to him, so that the surgeon could see on what lines to repair the face. The photo was sent, and the operation came off in due course, the surgeon every now and then looking at the photo to see that he was getting along all right. The operation was very successful, and, on the day that the dressings were finally removed, the mother came to take the girl home. The house-surgeon happened to be in the ward at the time. On seeing the girl the mother cried out, ‘ Oh, Doctor, you’ve made a mistake ! this isn’t Polly.’ ‘ Why, what do you mean ? ’ said the house-surgeon. ‘ This isn’t Polly, you’ve made her just like Lizzie.’ ‘ My good woman, we made her just like the photo you sent us.’ ‘ Oh, no ! you’ve made her just like Lizzie, and they were never a bit alike.’ The photo was sent for, and, on being confronted with it, the mother exclaimed, ‘ Lawks ! if I haven’t been and sent Lizzie’s photo by mistake.’ ”

VERY interesting are the immense deposits of infusorial earth found in various parts of the world. The best known of these is that found in Hanover, and called *kieselghur*. Seeing that all these deposits consist of the silicious envelope of the diatomaceæ, a family of unicellular plants, the name of “ diatomite,” suggested by Mr. John Moss, seems very appropriate. The proportion of organic residue found in diatomite varies very largely, one variety, the Scandinavian, is said to contain sufficient organic matter to mix it in the dough for bread in times of scarcity. The organic matter is burned off before using diatomite for the various purposes to which it may be put. Amongst many other purposes it is used in dentifrices. Mr. John Moss says :—“ For making dentifrices diatomite must be free from sand and also from organic matter, which is apt to suggest a disagreeable earthy taste. It should be as white as

possible, so as to exclude interference with the tint of the ingredients. These conditions secured, it may with advantage take the place of ground pumice and cuttlefish-bone in all cases, and of precipitated chalk in paste and powders, which contain other alkaline bodies, such as bicarbonate of soda and borax. If no alkali is present, or if diatomite alone is considered too light, some chalk may be retained in a powdered dentifrice with benefit. Diatomite properly refined is not gritty between the teeth, and polishes without scratching the enamel. Bulk for bulk it is half the weight of the lightest precipitated chalk. The formulæ appended are merely suggestions as to the proportions in which diatomite may be used in dentifrices, and are, of course, susceptible of an infinity of variation, according to taste and experience:—*Diatomite Tooth Powder*—Diatomite, 1 oz.; Creta Præcip., 1 oz.; P. Sapo. Alb., 1 oz.; Otto Rosæ, mij; Ol. Caryoph., mj; Ess. Menth. Pip., mv; Sacch. Lact., 1 dr. *Diatomite Tooth Paste*—Diatomite, 1½ oz.; Alum Ust., ½ oz.; P. Myrrhæ, ¼ oz.; Ol. Caryoph., mvj; Glycerin, ½ oz.; Ext. Cocci Liq., q.s.; M.S.A.”

AT Louth Borough police court, on September 8th, Herbert Manning, 86, Upgate, was charged that he, not being a legally qualified medical practitioner, did use the words “Dental Institute,” implying he was registered under the Dentists Act, 1878; and also that, not being so registered, he did use an addition, viz., “15 years’ experience in modern dentistry,” implying he was a person specially qualified to practise dentistry. Mr. W. Haddon Owen appeared on behalf of the defendant, and pleaded not guilty. Mr. R. W. Turner, barrister, appeared for the prosecution on behalf of the British Dental Association, and appealed to the Bench to protect the public and the qualified members of the profession. It was stated in evidence that the words complained of in the first part of the charge were placed on a large board outside defendant’s residence, while those in the latter portion of the charge appeared in advertisements. It was also stated that the defendant allowed the words to remain on the board after he had been warned; but the witness on behalf of the prosecution admitted that he believed the defendant to be competent. For the defence it was urged that the words of the Act had to be stretched to bear the interpretation given to them by the prosecution, and that there was no intention

to imply the qualification mentioned. The Bench inflicted a fine of £7 and 26s. costs, or one month's imprisonment.

ON August 25th, at an Ordinary Meeting of the East Grinstead Guardians, the Medical Officer (Mr. T. J. P. Hartigan) asked permission to make a novel application. It was that the Guardians should purchase a complete set of false teeth for a female inmate who has not a tooth in her head, and being unable to masticate her food suffers much from indigestion. Mr. Stenning suggested that the Board should grant the application, but that the teeth should remain the property of the Guardians. Everyone laughed at the suggestion at first, but Mr. Stenning said it was a serious matter, because if they once supplied teeth the Board might be receiving applications from all over the place and people would be coming into the house for a short time on purpose for a set of teeth. In answer to a guardian, Mr. Hartigan mentioned that he made the present application because it was necessary on medical grounds. The Board decided to grant the application, that the cost should not exceed £3 10s. and that the teeth should be lent to the inmate.

ON August 17th, before the Pontypridd Stipendiary Magistrate, Mr. C. K. Charles, practising as a dentist in the town, was summoned by the South Wales and Monmouthshire Dental Association for using the word "dentist" and a combination of letters, without being registered under the Dentists Act of 1878. Mr. Nicholas prosecuted, and Mr. W. R. Davies defended. Mr. Nicholas submitted a photograph of defendant's premises, which showed that over the door there were the words, "C. K. Charles, dentist." Mr. Nicholas then read Section 3 of the Dentists Act, under which the defendant was summoned. He relied on the word "dentist," and the combination letters "D.D.S." or "L.S.D." for a conviction. Mr. Davies: "D.D.S.," "U.S.A." Mr. Nicholas pointed out that the initials "U.S.A." had only recently—since the issuing of the summons—been put between the word "dentist" and the initials "D.D.S." A lengthy legal argument followed, in which Mr. W. R. Davies contended that the defendant had not held himself out as being registered under this Act. The question was, as according to the summons, whether the words were used to imply that he was registered under the Act of 1879. The Stipendiary announced that

he held the same view as defendant's counsel, and dismissed the case. The summons was wrong. Mr. Davies applied for costs, and they were allowed. Mr. Nicholas here remarked that, as the summons had fallen through as a result of a technical objection, he would take out another summons.

ON August 24th, in the same court, Mr. C. R. Charles was summoned for a breach of the Dentists Act. In opening the case, Mr. Nicholas explained that the present summons did not say anything about "implication," but the defendant was simply charged with having on the 20th of July last made use of the word dentist. The third section of the Act provided that, after the 1st of August, 1879, a person shall not be entitled to use the name of dentist alone, or in combination with other words, or dental practitioner, unless he was registered under the Act. He contended that use of the word "dentist" constituted an offence within that section. He did not know whether Mr. Davies would again put forward the defence that Mr. Charles possessed a diploma from an American University, but even that would be no answer to the charge. It was the duty of the defendant to get himself registered if he did possess such. Since the proceedings had been instituted the letters "U.S.A." had been interposed with the letters "D.D.S." but he understood that since last week the words dentist and the letters "U.S.A." and "D.D.S." had all disappeared. Replying to the Stipendiary, Mr. Nicholas and Mr. Davies said they had found out that the defendant was not a competent witness. The Stipendiary remarked that the question was if he had been registered. Mr. Davies said he did not suggest that the defendant was registered under the Act, and contended that there was no offence disclosed in the summons. The third section stated that not only must the word "dentist" be used, but must be taken and used as implying that he had been registered under the Act, not that he had been practising without being registered, but for using the name to imply registration. He argued that the summons did not disclose any offence. The Stipendiary: We think it does. Mr. Davies: In that case I ask your worship to state a case. The Stipendiary replied that it would be better for Mr. Davies to apply to the proper court, and not give him the trouble of doing so. The Bench fined the defendant the sum of £5.

THE HUXLEY LECTURE.

THE second Huxley Lecture, forming the inaugural address to the winter session at Charing Cross Hospital, was delivered on October 3rd, by Professor Rudolf Virchow, of Berlin. Professor Virchow, who spoke in English, commenced by expressing his pleasure and gratitude at the invitation, and his admiration for the illustrious man commemorated by the lecture. He then proceeded to discuss the influence which the study of biology had exerted upon medicine. In Huxley's student days biology as a science had hardly come into existence, but he was enabled by the application of the strictly objective training which he had received in anatomy and physiology to the new conditions in which he found himself to establish firmly the basis of zoological observation. As Professor Virchow had himself, in the Croonian Lecture, reminded Francis Glisson's countrymen, it was that distinguished Englishman who first revolted against the Paracelsian vitalism, and ventured to locate the *principium energeticum* in matter itself instead of regarding it as a sort of afflatus. The next great step, the recognition of the essential difference between living and non-living matter, was also the work of an Englishman, John Hunter. Even he, unfortunately, could not entirely shake off the influence of tradition, hence could not recognise the fact that life was actually bound up with structure. Thus arose his hæmatological theory, a new humoral pathology.

This was the basis of such biological views as were current in 1842, when Huxley was beginning his medical studies. The path along which biological investigation had marched with ever-widening strides during the present century is that which led Hunter, Darwin, and Huxley to their greatest triumphs, the path of genetic investigation. It was Goëthe who first opened this up with a full conviction of its importance, and what he did as regards plants was done in the case of animals by Wolf, Meckel, and the other members of the German embryological school.

The greatest difficulty in the advance of biology has been the natural tendency of its disciples to set the search after the unity of life in the forefront of their enquiries. Hence arose the doctrine of vital force, an assumption now discarded, but still revealing its influence from time to time in isolated errors. No satisfactory progress could be made till the idea of highly organised living things as units had been set aside, till it was recognised that they were in reality organisms each constituent part of which had its special life. Ultimate analysis of higher animals and plants brings us alike to the cell, and it is these single parts, the cells, which are to be regarded as the factors of existence. The discovery of the development of complete beings from the ova of animals and the germ cells of plants

has bridged the gap between isolated living cells and complete organisms, and has enabled the study of the former to be employed in elucidating the life of the latter. In a medical school where the teaching is almost exclusively concerned with human beings this sentence should be writ large: "The organism is not an individual but a social mechanism." Two corollaries must also be stated: (1) That every living organism, like every organ and tissue, contains cells; (2) that the cells are composed of organic chemical substances, which are not themselves alive.

The progress of truth in these matters was much retarded by that portion of Schwann's cell-theory which sought to establish the existence of free cell formation, which really implied the revival of the old doctrine of spontaneous generation. This belief was gradually driven out of the domain of zoology, but in connection with the formation of plastic exudates found a sanctuary in that of pathology. Professor Virchow said he himself was taught the discontinuity of pathological growths, a view which would logically lead back to the origin of living from non-living matter. He relates how enlightenment in this matter came to him. At the end of his academical career he was acting as clinical assistant in the eye department of the Berlin Hospital, and he was struck by the fact that keratitis and corneal wounds healed without the appearance of plastic exudation, and he was thus led to study the process of inflammation in other non-vascular structures, such as articular cartilages and the intima of the larger vessels. In no one of these cases was plastic exudation found, but in all of them were changes in the tissue cells. Turning next to vascular organs, and in particular those which were the common seats of exudation processes, he succeeded in demonstrating that the presence of cells in inflammatory exudates was not the result of exudation, but of multiplication of pre-existing cells. He soon extended this to the growth in thickness of the long bones, which was ascribed by Duhamel to organisation of a nutritious juice exuded by the periosteal vessels. He was thus eventually able to extend the biological doctrine of *omnis cellula e cellula* to pathological processes as well; every new formation presupposes a matrix or tissue from which its cells arise and the stamp of which they bear.

Herein also lies the key to the mystery of heredity. The humoral theory attributed this to the blood, and based the most fantastic ideas upon this hypothesis; we now know that the cells are the factors of the inherited properties, the sources of the germs of new tissues, and the motive power of vital action. It must not, however, be supposed that all the problems of heredity have thus been solved. Thus, for instance, a general explanation of theromorphism, or the appearance of variations recalling the lower animal, is still to be

found. In Professor Virchow's opinion, each case must be studied on its merits, and an endeavour made to discover whether it arose by atavism, or by hereditary transmission of an acquired condition. As to the occurrence of the latter mode of origin, he expresses himself positive. Equally difficult is the question of hereditary diseases; this is now generally assumed to depend on the transmission of a predisposition which is present, though not recognisable, in the earliest cells being derived from the paternal or maternal tissues. But the most elaborately constructed doctrines as to the hereditaryness of a given disorder may break down before the discovery of an actual *causa viva*. A notable example of this is found in the case of leprosy, the transmission of which by inheritance was at one time so firmly believed in that, thirty years ago, a law was nearly passed in Norway forbidding the marriage of members of leprosy families. Professor Virchow himself, however, found that a certain number of cases, at any rate, did not arise in this way, and his results were confirmed by the discovery of the leprosy bacillus by Armauer Hansen. In a moment, the hereditary theory of the disease was overthrown, and the old view of its acquirement by contagion restored. Precisely the same had happened a few decades earlier with regard to favus and scabies.

Another instructive condition is that known as *heterotopia*, in which fragments of tissues or organs are found dwelling in a situation other than that which is normal to them. This is particularly the case with certain glands, such as the thyroid and suprarenal, but is also known with cartilage, teeth, and the various constituents of dermoids. It no doubt occurs by a process of transplantation, the misplaced tissues developing no new properties but merely preserving their normal powers of growth. The attempt to generalise from this fact and to attribute all tumor-formation to this cause carries the idea beyond its proper scientific limits.

Turning to the subject of parasitism, Professor Virchow pointed out how the progress of scientific observation had been retarded for centuries by the prevalence of the assumption made by Paracelsus that disease in general was to be regarded as a parasite. Pushed to its logical conclusion this view would imply that each independent living part of the organism would act as a parasite relatively to the others. The true conception of a parasite implies its harmfulness to its host. The larger animal parasites have been longest known, but it is not so many years since their life history has been completely ascertained and the nature of their cysts explained, while an alternation of generations has been discovered in those which are apparently sexless. Very much more recent is the detection of the parasitic protozoa, by which the occurrence of the tropical fevers

may be explained ; as yet we have not complete knowledge as to their life-history, but we hold the end of the chain by which this knowledge can be attained.

The *élite* of the infectious diseases are, however, the work of the minutest kind of parasitic plants, bacteria, the scientific study of which may be said to date from Pasteur's immortal researches upon putrefaction and fermentation. The observation of microbes under exact experimental conditions and the chemical investigation of their products opened up the modern field of bacteriology, a science among the early triumphs of which were the discoveries of the bacilli of tubercle and Asiatic cholera by Robert Koch. In connection with this subject three important landmarks require comment. One is the necessity for distinguishing between the cause and the essential nature of infectious diseases, the latter of which is determined by the reaction of the tissues and organs to microbes. Secondly, there is the relation between the smaller parasites and the diseases determined by them ; this may be summed up in the general word, introduced by the lecturer himself, infection. But to assume that all infections result from the action of bacteria is to go beyond the domain of present knowledge and probably to retard further progress. The third point is the question as to the mode of action of infection ; it is only the larger parasites whose main effect is the devouring of parts of their hosts ; the smaller act mainly by the secretion of virulent poisons. The recognition of this latter fact has led to the brilliant work of Lister on the one hand and to the introduction of serum—therapeutics—on the other.

In conclusion, Professor Virchow referred with pride to the influence of cellular pathology in modern treatment, entailing as it does, the principle of destroying the focus of disease by early operation. The cells of the body were like bacteria in that they secreted juices which influenced the rest of the organism, and hence extracts of organs had come into therapeutic use. The lecturer in laying down the qualifications required by a physician and a naturalist, wished the Charing Cross Hospital Medical School good fortune in following up the newly opened path.

TO CLEAN THE MARBLE upon your cabinet or table, take 2 parts common soda, 1 part pumice stone, 1 part powdered chalk. Mix with water. Rub well over the marble. The stains will be removed, then wash with soap and water.—*Western Journal*.

TO CLEAN A MIXING SLAB, use aqua ammonia. A few drops allowed to remain a short time will make the cleaning easy.—*Western Journal*.

Abstracts and Selections.

THE ESSENTIAL OILS AND SOME OTHER AGENTS, THEIR ANTISEPTIC VALUE, ALSO THEIR IRRITATING OR NON-IRRITATING PROPERTIES.

By A. H. PECK, M.D., D.D.S., Chicago, Ill.

To determine the antiseptic value of these agents the following experiments were conducted:—Test tubes, each containing ten c. c. sterilized mutton bouillon, were used. The broth in these tubes was, for the most part, infected with saliva from various members of the class. In each set of plants made, a control tube was used, *i.e.*, a tube in which the broth was infected with saliva, but into which no antiseptic agent was placed, simply to act as a control for the results of the remaining tubes into which antiseptic agents were placed. In each instance the control tube presented a full development of bacteria, thus proving the accuracy of each set of plants. One drop of the essential oil was first used in the tubes. When one drop prevented development of bacteria, the quantity was gradually decreased in other plants, until the least amount that would prevent development was ascertained. To divide the drop I placed ten drops of alcohol in a small vial, and into this placed one drop of the oil; the alcohol dissolves the oil immediately. I then used in the culture tube such proportion of the drop of the essential oil desired, one drop of the solution representing one-tenth of a drop of the oil. Those drugs that were found ineffective with one drop were increased in other plants until found effective, or were given up as unsuitable, or worthless as antiseptics. The same dropper was used throughout.

An antiseptic must be regarded as a poison to the vegetable cell, and many of them act also as poisons to the animal cell. I undertook this series of experiments for the determination of these differences of poisonous effects with the idea that in selecting antiseptics for use in practice we should have special regard to the effect of the agents upon the animal tissues to which they are applied. To determine the irritating or non-irritating properties of these oils an extensive course of experiments with them has been conducted during the winter months, in connection with sores artificially produced on guinea pigs, and also on my own person. To determine the effect of these agents when applied directly to soft tissue the applications were made, in each instance, to my own person. And pardon me when I say that I believe I have come to positive conclusions regarding some of these agents along these lines.

Oil of cassia. We find that three-tenths of a drop is the

smallest quantity that will prevent the development of bacteria in ten c. c. of broth, and there being 67 drops of oil of cassia in one c. c., this agent is effective as an antiseptic in 1 to 2,233 parts, that is to say, one whole drop of oil of cassia would prevent development of bacteria in 2,233 drops of infected broth. This explanation, if you please, will hold good in connection with each agent we have used. Oil of cassia is undoubtedly the most potent of the essential oils as an antiseptic. I have had at least a dozen samples of cassia, obtained from as many different sources, and upon analyzing them have found them to be adulterated in each instance. One sample, especially, shipped direct from China to a dealer in Chicago, was found to contain fixed oils in considerable quantity. Others were found to contain alcohol, etc. This oil, as found in commerce to-day, is not as potent an antiseptic, by about one-half, as was the cassia obtained ten years ago. A reference to the work of Dr. G. V. Black along this same line, done about ten years ago, serves to prove the correctness of this statement. The samples of cassia he used at that time were potent in 1 to 4,000 parts. If I could have obtained a pure, unadulterated sample of cassia it would certainly have out-classed oil of cinnamon as an antiseptic by a wide margin; but as it is, as to the division of a drop, they have proven exactly the same. However, you will notice when we consider that agent, that of oil of cinnamon only 63 drops are required for one c. c., whilst of cassia 67 drops are required. This simply means that one drop of oil of cinnamon is just slightly larger in bulk than one drop of oil of cassia, so that this discrimination in the number of drops to the c. c. still places oil of cassia ahead of oil of cinnamon as an antiseptic, the potency of oil of cinnamon figuring out 1 to 2,100 parts. While oil of cassia stands at the very head of the essential oils as an antiseptic, it is also true that it is the most poisonous in its effect upon soft tissue. As a test of the irritating properties of oil of cassia, a pellet of cotton was saturated with it and placed in a small rubber cup, to prevent evaporation. This was applied to the surface of the skin and held there by means of a piece of court plaster large enough to cover it over and stick tightly to the surface of the skin about the edges. This was retained in place for 24 hours, during which time the irritation to the soft parts was by no means a pleasant feature. At the end of this period a blister invariably forms; however, the inflammation in the tissues at this time is not

very great. The blister will occupy an area from one-half to one-third greater than that to which the oil is directly applied, and will fill and refill with serum several times before any tendency to recovery is noticed. At the end of 48 hours the inflammation in the parts involved is intense, and occupies an area four or five times as great as that to which the oil is directly applied. Numerous small, independent blisters almost invariably form about the circumference of the inflamed area. This condition continues for several days, and while the inflammatory process is at its height the sore is one of the ugliest and most formidable in appearance it has ever been my privilege to look upon. These sores, also, are very slow in healing. It is with seeming regret on their part that the inflammation is permitted to subside, and the parts to return to a normal condition. Whilst these sores are in every way just as bad as has been described, they are, however, fraught with no serious consequences.

To further test the irritating properties of this oil, a sore in connection with which there was considerable inflammation, was produced on a guinea pig, and treated for a number of days with the spray of cassia, by means of an atomizer. So long as this treatment was continued the parts could not recover, but quite to the contrary, the inflammation was greatly increased. Suppuration was then produced by infecting the sore with pus microbes. This in turn was treated with the spray of cassia, with the result that the germs were destroyed, and the pus formation caused to cease, thus proving quite conclusively that this agent is an excellent germicide when applied to suppurating surfaces, as well as a most potent antiseptic.

To my mind, it is clearly proven that while the antiseptic and germicidal properties of this oil are of the highest order, it is one of the most irritating, in its effects on soft tissue, of all the agents with which we have anything to do. And because of these effects, as outlined above, I feel perfectly justified in making the statement that oil of cassia should never be used as a dressing in the root canals of teeth.

There is also another reason, aside from the above, why it should not be used, and that is, its proneness to cause discolouration of the teeth. In almost every instance in which its use is continued for a time the teeth are more or less discoloured, and in some cases very considerably. This is one of the most difficult forms of discolouration to correct that we are called upon to treat.

Is it not reasonable to suppose that when cassia is used in the treatment of pulpless teeth, the above disagreeable conditions may occur in the soft tissues occupying the apical space and the periodontal membrane become involved in the inflammatory process? Have you ever thought that the excessive flow of serum which so frequently occurs from the tissues of the apical spaces of teeth that are being treated with this oil, is nothing more or less than the discharge of actual blister, as in the cases above recited? If these are reasonable suppositions - and I believe they are—is it still a source of wonder to any of you that teeth, under these circumstances, so suddenly develop such extreme tenderness to pressure, as they so frequently do?

Oil of cassia, however, has a place in our practice as dentists. Cassia water, sometimes, in the treatment of fistulous abscesses, is very useful. It is so stimulating to the tissues that it excites a healthy action on the part of the latter when other agents fail. Oil of cassia in the treatment of severe cases of pyorrhœa, so-called, where the pockets about the teeth are deep, and considerable pus present, is exceedingly useful. In such cases it may be used in full strength by means of a drop syringe. The oil is not permitted to remain in contact with the soft tissues a sufficient length of time to cause trouble, it is so soon diluted by the fluids of the mouth.

Oil of cinnamon of Ceylon. We find that three-tenths of a drop prevents development of bacteria in ten c. c. of broth, and that 63 drops constitute one c. c., thus showing this agent effective as an antiseptic in 1 to 2,100 parts. Oil of cinnamon of Ceylon, as you well know, is very much the same nature as oil of cassia. However, in some respects there is a marked difference between them. It has been demonstrated that oil of cinnamon is not so irritating to soft tissue as oil of cassia. An application of oil of cinnamon to soft tissue, in the same manner that cassia was applied, and left for twenty-four hours, caused considerable irritation and formation of blister. At the end of forty-eight hours the inflammation was severe; however, not so intense as that caused by cassia, and the area of tissue involved in the inflammatory process was not so great. Also, the blister that developed by the application of cinnamon was by no means as large as that from cassia, occupying the centre of the inflamed area and spreading over tissue in extent equal only to that to which the agent was

directly applied. The blister and inflammation are not so persistent as is the case with cassia, the former refilling with serum usually but two or three times, and the inflammation passing away quite readily.

A sore, attended with much inflammation, on a guinea pig was treated with the spray of oil of cinnamon with the result that it was further constantly irritated and thus prevented from healing. Suppuration was then produced in the sore, and again treated with the spray of this oil—the germs being destroyed and the pus formation ceasing. The action of cinnamon was not so vigorous as that of cassia.

To my mind, cinnamon is altogether too irritating for use in the treatment of pulpless teeth.

A synthetic oil of cinnamon, a sample of which I secured this spring from the first lot sent to this country (it being prepared in both France and Switzerland) proves to be as potent an antiseptic as the regular oil, three-tenths of a drop preventing development of bacteria in ten c. c. of broth. Sixty-four drops of this oil constitute a c. c., thus showing it effective as an antiseptic in 1 to 2,133 parts. It is, however, in its first effects more irritating to soft tissue than oil of cassia. An application was made to soft tissue, and at the end of fifteen hours a fully developed blister, in extent larger than the area of tissue to which the oil was applied, was the result. There was very little inflammation or discolouration of the tissues. The first effect of this oil on soft tissue was so vigorous, very much tenderness and inflammation were confidently expected to follow. In this, however, I was disappointed. The blister continued to refill with serum several times, but actually no tenderness or inflammation worthy of mention developed in the surrounding parts. I cannot recommend it for use in the treatment of pulpless teeth.

Beech wood creosote is the next agent, from point of potency, as an antiseptic; five-tenths of a drop prevented development of bacteria in ten c. c. of broth. There are 64 drops in one c. c., thus showing creosote effective as an antiseptic in 1 to 1,280 parts. This agent is practically non-irritating to soft tissue. An application remaining for a period of 36 hours produced practically no irritation. There was just the slightest evidence of irritation about the centre of the spot where it was applied. There was no inflammation. The surface of the skin was slightly

discoloured and also slightly burned or seared over, but not to an extent that caused the loss of any tissue. A sore on a guinea pig was treated with the spray of creosote with the result that the inflammation gradually subsided, and the sore healed with little delay.

Another sore in which suppuration was produced was treated in a like manner, the germs being readily destroyed and the pus formation stopped. Continued treatment resulted in the gradual healing of the sore. Creosote has proven its right to stand among the first, from point of potency, as an antiseptic, and because it has been demonstrated that it is practically non-irritating to soft tissue, it is a safe agent, and in some cases a very desirable one, for use in the treatment of pulpless teeth. A case of putrescent pulp, for instance, of long standing, one in which the lateral openings and also the dentinal tubules are completely saturated with mephitic odours and gases, creosote, in my judgment, is the most potent and desirable of the available agents. It is very penetrating, and one of the most persistent in its effects of all the agents at our command. I have used it to good advantage in severe cases of apical pericementitis. However, in some instances, where discolouration of the teeth has occurred, it has seemed that it was due to the action of the drug. Creosote being more or less of the nature of carbolic acid, possesses to a certain extent the properties of a local anæsthetic, and because of this property it has quite a beneficial effect upon inflamed tissue.

Oil of cloves. Six-tenths of a drop prevented growth in ten c. c. of broth; 69 drops constitute one c. c., showing it effective as an antiseptic in 1 to 1,150 parts. Oil of cloves is absolutely non-irritating to soft tissue. An application to the surface of the skin for 36 hours left no more evidence of having been confined there than so much sterilized water would have done. No irritation, no discolouration. Sores were produced on guinea pigs and treated with the spray of this oil. The inflammation subsided more rapidly than when treated with any other agent, and the sores healed as readily as they could, simply proving beyond any possibility of doubt that, while effectively destroying microbes, the only action of oil of cloves in contact with irritated, inflamed soft tissue is that of a quieting, soothing agent, serving to reduce the irritation and inflammation, and returning the disturbed tissue to its normal condition. A sore in which suppuration was produced by being

infected with pus microbes was treated with the spray of this oil ; the germs were destroyed, and the formation of pus was stopped.

A sore on my arm, produced by an application of cassia, became infected and pus formed. This was washed thoroughly with a 1 to 1,000 solution of bichloride of mercury every night for several times, and dressed in turn with iodoform, nosophen and aristol, with no other result than an absolute failure to stop pus formation. One night, after having washed the sore thoroughly with the bichloride solution, I poured oil of cloves on to the raw tissue. There was only a very slight smarting for a few minutes, after which its action was that of a quieting, soothing agent. This application was held in position for 24 hours. It was then removed ; no pus was present, and the little granulations could be seen springing up all over the surface of the sore. It was immediately dressed with aristol and let alone for 48 hours, at the end of which time it was perfectly healed.

Another sore on the lower part of my right leg, the result of an application of formalin, was causing a great deal of trouble. The inflammation was severe, the tissues were very tender, the muscles felt bound up and were very painful, it being exceedingly difficult to walk. Continued treatment with ordinary remedies resulted in no relief. One morning, after having thoroughly cleansed the sore, a liberal quantity of oil of cloves was placed on it, and the bandage applied. Within four hours' time the very disagreeable, drawn condition of the muscles passed away, the pain ceased, and the foot could be moved in all directions as freely and comfortably as could the other, and could be used in walking just as well as it ever could.

Oil of cloves, for general use in the treatment of pulpless teeth, is certainly one of the best agents at our command. It possesses the property of destroying or rendering inert septic and infectious material. In cases of apical pericementitis it is perhaps the best agent that can be used. It possesses local anæsthetic properties to a marked degree, and, like some of the other agents, because of this fact, serves to reduce the inflammation in the tissues in the apical space and causes them to return to a normal, healthy condition.

Oil of bay. Seven-tenths of a drop prevented development in ten c. c. of broth. Seventy-two drops are necessary for one c. c.,

showing this agent effective as an antiseptic in 1 to 1,028 parts. Oil of bay, to me, is a comparatively new agent, and I believe I am warranted in making the statement that it is a new agent to the vast majority of the dental profession. A year ago last winter a gentleman spoke to me about this oil, said he had been using it for some time in the treatment of pulpless teeth, and that, so far as his clinical experience went, had found it to be an efficient and agreeable agent. He stated that he had not observed any bad effects along the line of producing irritation, or anything of that sort. He requested that I test it, which I did, with the result above stated, which places this oil in the foremost ranks of the list of antiseptics. I have used it more or less since, and in one case that I have in mind, thought the irritation and tenderness which was induced was directly due to the action of the oil. But in subsequent use, have observed none of these effects. I came to the conclusion that I was wrong, that there must have been some foreign, irritating substance present which caused the trouble. I have made two applications of the oil to soft tissue, retaining each in contact for 36 hours, for the purpose of observing its effect, and no irritation resulted in either case.

A sore was produced on a guinea pig with an irritant which caused intense inflammation. This was treated with the spray of bay for several days, and the closest observation did not reveal any additional irritation, but, to the contrary, the inflammation gradually subsided. However, not so rapidly or willingly as when some other agents were used—as cloves. A sore in which suppuration was produced, on being treated with the spray of bay, yielded very nicely, the germs being destroyed and the pus formation stopped. I think we are safe in concluding that oil of bay is a valuable addition to our list of agents for the treatment of pulpless teeth. So far, I can see no objection to its use, and it is certainly a most effective agent.

Oil of sassafras. Seven-tenths of a drop prevented growth of bacteria in ten c. c. of broth; 70 drops are required for one c. c., showing it effective as an antiseptic in 1 to 1,000 parts. Oil of sassafras in contact with soft tissue for 36 hours produced no evidence of irritation. It has proven to be a very potent antiseptic. I have treated sores, in which there was marked inflammation, with the spray of sassafras, and the result was much the

same as with the last previous agents ; the inflammation subsiding, the irritation passing away and the sore healing. It has not exhibited the ability to destroy germs and prevent pus formation to nearly the extent that the stronger agents have. I have never used oil of sassafras in the treatment of pulpless teeth, but I certainly can see no reason why it should not be a potent and harmless agent in this connection.

Oil of peppermint. Eight-tenths of a drop prevented development of bacteria in ten c. c. of broth ; 72 drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 875 parts. An application of oil of peppermint to soft tissue continued for 36 hours produced no irritation, no discolouration of the skin, no inflammation, thus showing conclusively that this, also, is non-irritating to soft tissue. A sore in which considerable inflammation was present was treated with the spray of this oil, with the result that the inflammation readily yielded, the irritation subsided and the sore healed. Another sore in which suppuration was produced was treated in the same way, with the result that the germs were destroyed, and the pus formation was stopped, which proves that this agent is not only an antiseptic, but also destroys the germs and thus prevents pus formation. This is an agent which I have rarely ever used in practice. Three years ago I used it a little in treatment cases, but discarded it simply because of its persistent, penetrating odour. Other than that, I can see no objection to its use in pulpless teeth.

Dr. Black's "1-2-3." This is the next agent in point of potency. One and four-tenths drops prevented development in ten c. c. of broth ; 65 drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 454 parts. "1-2-3," as you well know, is a preparation given to the profession a number of years ago by Dr. G. V. Black, consisting—the mild solution, so-called, and this is the one used in these tests—of one part oil of cassia, two parts carbolic acid crystals, and three parts oil of gaultheria. It has always proven itself a most efficient agent in the treatment of pulpless teeth, and has been used by very many in the dental profession for the last ten or twelve years, possibly more than any other one agent. I have used it continuously since I have been in practice, and have never observed any bad effects from its use. No irritation to the soft parts, no tenderness of the tooth to pressure, no

inflammation resulting. Possibly some of you will wonder why "1-2-3" is such an efficient and desirable agent, consisting, as it does, of cassia, carbolic acid and winter-green; carbolic acid being not a positive persistent antiseptic, but one whose restraining effects upon the development of bacteria are only transient; oil of gaultheria being absolutely worthless as an antiseptic, and the use of cassia being so thoroughly condemned because of its extreme irritating properties. Of course, this agent depends upon the cassia for its antiseptic properties. The gaultheria is used as a diluent to the cassia. The carbolic acid was used more especially because of its anæsthetic properties on soft tissue. When these different agents are properly mixed to form "1-2-3," it is the opinion of Dr. Black that there is more or less of a chemical union between them, so that the individuality of each separate agent seems to be lost, and the result is the formation of a new agent, or one with different characteristics from those possessed by the three individual agents. At any rate, it is non-irritating to soft tissue. An application left on for 36 hours produced no irritation whatever. There was only a slight searing, and discolouration of the surface of the skin. Sores with much inflammation present were treated with the spray of "1-2-3," which did not produce further irritation. Its action was more like that of a neutral agent (so to speak), not irritating the sore, nor, on the other hand, imparting, to any appreciable extent, a soothing, quieting influence, the inflammation subsiding just about as it would if left to itself with all irritating influences removed. A sore, in which suppuration was produced, was treated with the spray of this agent. It demonstrated its right to be classed as a very potent germicide. The germs were destroyed and the pus formation ceased.

"1-2-3," as formed with the present cassia of commerce, is not so potent an antiseptic as that formed with cassia obtainable several years ago. This must be due to the fact stated above, that cassia is so adulterated at the present time. In fact, "1-2-3" is lessened in potency in almost direct proportion to the extent of the adulteration of the cassia.

Seven-tenths of a drop was effective in 10 c. c. of broth, as shown by experiments conducted by Dr. Black several years ago.

"1-2-3," as shown by these experiments, is abundantly effective, but if cassia is continued to be adulterated the time may come when

it will not be. For general use, in the treatment of pulpless teeth, "1-2-3" is certainly an effective and excellent agent.

Carbolic acid, 95 per cent. One and eight-tenths drops prevented development in 10 c. c. of broth; 61 drops are required for one c. c., showing this agent effective as an antiseptic in 1 to 338 parts. Carbolic acid is not a permanent, positive antiseptic. Its restraining power on the development of bacteria, in the majority of plants one makes is only transient. One and eight-tenths drops prevented development for a period of three days, after which the bacteria developed in almost every instance. The restraining effect of this agent upon the development of bacteria seemed to be almost in direct proportion to the quantity of the agent used in the culture tube. The use of this agent in dentistry is so familiar I need not dwell on that point.

Oil of myrtol. One and nine-tenths drops were necessary to prevent development of bacteria in 10 c. c. of broth; 68 drops constitute a c. c., showing myrtol effective as an antiseptic in 1 to 357 parts. Oil of myrtol is an agent which I have used but very little in practice. In the majority of cases in which I have used it there has seemed to be more or less irritation produced, more or less tenderness of the tooth developing, so that it impressed me as being somewhat of an unfavourable agent for this purpose. An application of myrtol to soft tissue for 36 hours produced decided irritation, and there was a strong tendency to the formation of blister. The surface of the skin was destroyed. The irritation and inflammation present continued for two or three days, gradually abating. A sore on a guinea pig being treated with the spray of this oil, showed evidence of further irritation. So long as the treatment was continued, the inflammation refused to subside. A suppurating sore, being treated in the same way, was certainly benefited by a consequent destruction in the germs and cessation of pus formation. There is no doubt but that this agent is quite irritating, and one that should not be generally used in the treatment of pulpless teeth. There are cases in which I use strong myrtol water, seemingly to good advantage, and these are in connection with abscesses, with fistulous openings, especially those of long standing, in which there is more or less irritation of the soft parts throughout the tract of the fistule, and that uneasy, disagreeable sensation oftentimes experienced by the patient in connection with these cases.

Oil of cajeput. Six drops are necessary to prevent development in 10 c. c. of broth ; 72 drops are required for one c. c., showing this agent effective as an antiseptic in 1 to 120 parts. Cajeput is non-irritating to soft tissue. Applications of this oil to soft tissue, retained for 36 hours, produced no evidence of irritation ; in fact, the discolouration of the skin was very slight and remained but a short time. A sore on a guinea pig, in which there was considerable inflammation, was treated with the spray of oil of cajeput, and no increase of the irritation was produced. Another sore in which suppuration was produced was treated in the same way, with the result that the germs were gradually destroyed, its action, however, not being very positive, for if the treatment was discontinued for a day or two the pus formation continued as before.

Oil of cajeput is an agent which I have never used very extensively in my practice. At first I did use it, more or less, in the treatment of pulpless teeth, but latterly I have not used it in this connection ; in fact, the only use I make of it is occasionally to moisten the inner walls of the root canals previous to filling with gutta-percha. For this purpose its non-irritating nature recommends it, and especially the fact that it is a solvent of guttapercha and causes the latter to adhere to the walls of the canals.

Eucalyptol (Sander's and Merck's). Six drops of each of these preparations are necessary to prevent development of bacteria in 10 c. c. of broth ; 70 drops are necessary for a c. c., showing each preparation effective as an antiseptic in 1 to 116 parts. Eucalyptol in contact with the skin for 36 hours produced no evidence of irritation, no inflammation, no discolouration, thus proving that the agent is non-irritating and harmless in contact with soft tissue. A sore in which considerable inflammation was present was treated with the spray of this agent with the result that the inflammation readily yielded, the irritation subsided, and the sore healed, thus further proving that it is non-irritating even to injured, inflamed soft tissue. A sore in which suppuration was produced was treated in the same way, with virtually the same results as with cajeput ; it exhibited a restraining influence upon the development of bacteria and pus formation, but the treatment being discontinued for a while, pus formation went on as before. As an agent to place in the root canals of teeth after the removal of a pulp, following devitalization, in order to keep the parts healthy for a few days

previous to root canal filling, it is perhaps the agent I use more than any other. It is certainly harmless, never exciting irritation. For the purpose of slightly moistening the inner walls of canals previous to root canal filling, eucalyptol is the agent that I nearly always use.

The oil of eucalyptus, as found in the market, only produced a restraining effect upon the development of bacteria when a saturated solution was formed with the bouillon.

Oil of gaultheria was carried in my experiments as high as eight drops, this quantity forming a saturated solution in the 10 c. c. of broth, that is to say, the broth had taken up, or dissolved, all of the oil that it could possibly retain, there being also a large number of free globules floating about in the broth, and still development of bacteria took place quite abundantly, showing that this agent is useless in restraining the development of bacteria. It is certainly of no use to us as an antiseptic.

Eugenol. This agent resulted in the same way as gaultheria. Eight drops were used in the 10 c. c. of broth, which amount formed a saturated solution with numbers of globules of the free oil floating about, and still the bacteria developed, thus proving that eugenol also is useless as an antiseptic.

Formalin. Of late the dental profession has taken up this agent for the treatment of pulpless teeth, the treatment of abscesses and for devitalizing pulps, etc., and many are reporting wonderful results from its use. Not long since I read an article in one of our journals in which the writer paid a glowing tribute to this agent as a most efficient and desirable one for the treatment of nearly all conditions of pulpless teeth. Having had some experience with it myself, and because of many negative results experienced, having had my suspicions aroused as to whether it was a proper agent to be used about the mouth, I decided to investigate it as thoroughly as possible. First I tested it as to its antiseptic properties, and found it to be quite a powerful antiseptic. Of the formalin preparation, which is a saturated solution of the gas formaldehyde in water (the latter taking up about 40 per cent. of the former), four-tenths of a drop prevented growth of bacteria in 10 c.c. of broth; 56 drops are necessary for a c.c. This shows formalin potent as an antiseptic in 1 to 1,400 parts. Somebody has been so enthusiastic over this agent as to make the statement that

it is fully as potent an antiseptic as is bichloride of mercury. This is certainly a mistake. I prepared a 1 to 1,000 solution of bichloride of mercury and found it required nine drops of this solution to prevent development of bacteria in 10 c.c. of broth. I prepared a 1 to 1,000 solution of pure formaldehyde, which we have now in a solid state—the gas being reduced to such by chemical processes—and of this solution found that it required 40 drops to prevent development of bacteria in 10 c.c. of broth, thus proving that formaldehyde is not so potent an antiseptic as bichloride of mercury, by at least fourfold. I next resolved to determine its ability to irritate soft, animal tissue—the same as I did with the other agents. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cup to prevent evaporation, placed it on the surface of the skin on the lower part of my right leg, and covered it over with a large piece of court plaster stuck tightly about the edges. This was placed there the 14th day of last March, at 12.30 a.m. I went to bed and went to sleep. Between four and five in the morning I was awakened by the pain, and could get no rest after that. The pain was quite intense, and of a very peculiar character. It seemed as if something were inside my leg gripping it as if in a vice. Then it would take a turn and twist about, as if tearing the inside out. It would stop for an instant, and then the performance would be repeated with renewed vigour. The pain continued more or less severe all day. I wanted to keep the application in place for 24 hours—the time adopted for the other agents—but at the end of 20 hours, the pain had been so constant and the tissues began to look so ugly, that I concluded to remove it. The tissues to which it was applied and for about two inches in all directions was turned as white as pure snow, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was perfectly anæsthesised to a considerable depth. Just at the circumference of the application there was considerable tenderness. There was much swelling which seemed to be more like that of œdema than of true inflammation. In about two or three days some colour began to return to the parts, except to which the agent was directly applied, which latter never regained its normal colour. In about two days more a line, purple in colour, began forming at the circumference of the

point of application—a line of demarkation—and it became apparent there was to be a break in the tissues. This break occurred, and sloughing took place ; considerable tissue was lost all over the surface of the inflamed area. The tissue in the centre raised about the edges, but was very obstinate about coming away. From the time the agent was thoroughly absorbed in the tissues, physically I was not up to the standard ; my appetite was more or less impaired ; the digestion and eliminative organs were somewhat interfered with. These conditions continued to grow worse until the climax came in the form of quite a severe case of systemic poisoning, the poisonous matter being thrown off through the medium of a severe diarrhœa, and also much vomiting—the former continuing for a period of three days, the latter for one day, following which time my physical condition rapidly improved.

Having seen a number of cases that have been treated by physicians with various per cent. solutions of formalin in which more or less sloughing of the soft parts has resulted—one which I saw not long since in which as low as a two per cent. solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experiences with it, I have come to the conclusion that we should get along without it in the treatment of diseased conditions about the mouth.

As I have devoted a paper to this agent before another society, I will not give my observations of it in more detail here. My paper is now too long for me to consider the subject of the selection of antiseptics with a view to utilising their therapeutic effects in individual cases in connection with their antiseptic powers, but this can be fairly made out from the observations related.—*Dental Review*.

Review.

ORAL PATHOLOGY AND PRACTICE, by W. C. BARRETT, M.D., D.D.S.,
M.D.S. Philadelphia : S. S. White Manufacturing Company,
1898. pp. 234.

THE reviewer who takes up Dr. Barrett's book cannot help noting as being remarkable the extensive area of subjects which it covers. It bears some resemblance to a large tract of country

divided and subdivided into small allotments ; for the chapters are unusually short, and range from paragraphic disquisitions on bacteriology and diseases of the tongue to learned discourses on sympathetic disturbances, physical diagnosis and shock. There is either a great deal too much or a great deal too little in its pages ; the task of condensation has failed ; extremes would have been more acceptable. The work is primarily intended "as a text-book for the use of students in dental colleges" ; secondarily for dental practitioners. The latter class will find it the more useful, not so much as a solid practical treatise on oral pathology as a sort of reminder of more serious and substantial productions. We fear that its pages would be mostly unintelligible to the student who had not read or become thoroughly conversant with the principles of general pathology, because statements are made and not explained, arguments advanced and not proved, debatable points raised and not answered. Chaos would reign in the student mind unless it had been previously prepared to receive the dicta here found. We should have preferred the title to read "Dental and Oral Pathology and Practice." Such an appellation would be more correct.

The strength and value of the book lie in the dental side of the question ; its weakness, and, in our opinion, inutility, from a student's point of view, in its oral aspect. That is to say, it would not have missed its mark if diseases concerning the teeth alone had been treated, and morbid buccal labial and lingual affections had been left out. Dental surgeons should not be oral physicians or surgeons. The care of the oral cavity in disease falls more in the province of the general practitioner than in that of the dental specialist, and if an ordinary dental student undertook to treat patients on the lines here laid down the result would probably be far from satisfactory. This is no attempt to belittle a student's knowledge, or restrict his work merely to operations on the teeth, or depreciate his enthusiasm for a fuller acquaintance with pathology in general ; but we hold most strongly that the domain of general surgery, which includes the morbid affections of the mouth, should not be invaded by those who make, or intend to make, dental surgery the profession of their lives. True, his knowledge of facial neuralgias, paralyses, syphilis, &c, should be perfectly complete—a height, however, impossible to attain by perusing the present volume—but we fail

to see that he should be called upon ever to treat them. Even if a man possesses a surgical or medical qualification plus his dental diplomas, he should deem it his duty to send his patient to the family physician, or the neurologist, or the general surgeon.

Thus, we think, that many chapters ought to have been omitted and others, viz., those bearing on dental matters amplified in substance, increased in number, or, here and there, made the clearer recipients of a pathological emendation.

For instance, pulp diseases are summarily dismissed in three and a half pages, no mention being made of hyperæmia, degenerative changes, chronic inflammation with enlargement, and so on. And we cannot agree with such a statement as the following (p. 171): Secondary dentin, (*sic*) pulp nodules and calcifications are parts of the same process—the result of deranged neural currents and of some perversion of nutrition which induces a formation of dentin in abnormal quantities or in an anomalous position through the undue activity of the odontoblast cells under the excitement of just enough irritation to act as a proper stimulant.” And again: “The odontoblasts are not found exclusively upon the periphery of the dental pulp any more than osteoblasts exist alone in connection with periosteum.” Most recent research on the formation of pulp stones show that no odontoblast whatever takes part in their formation because non-existent in the centre of the pulp.

And once again, “Enamel (p. 76) is bone deprived of the laminæ and canaliculi, cut off from its generic origin, without independent nutrition, but still retaining a proportion of the animal matter, without which it would be something alien and foreign.” Is not this teaching antithetical to that of our latter-day histologists and patho-histologists?

But the earlier chapters on bacteriology and inflammation generally, are good as far as they go; nevertheless, a more systematic method of treatment of subject, together with the introduction of more patho-histology, would, we are bound to confess, add greatly to the importance and interest of the work.

Still, docendo discimus: and if the author has discovered from experience that this general plan of teaching has been acceptable in the past we presume that the student of the future will endorse his sentiments, and, as a consequence, the book will have a steady sale in transatlantic dental colleges.

THE DENTAL RECORD.

VOL. XVIII. NOVEMBER 1ST, 1898.

No. 11.

Original Communications.

PRESIDENTIAL ADDRESS.*

By A. W. W. BAKER, M.D., F.R.C.S., L.D.S.I.

IN returning thanks for the honour you have done me in selecting me as your President I am using no empty form, as I esteem it a very great compliment to be asked to fill such a position. I can only say that I trust in filling it I may be able to help in the excellent work which I look forward to this society performing, viz., furthering your professional education.

But any pleasure that I naturally feel on such an occasion as the present is sadly tempered with regret by the enforced absence of one who would have been with us, had his health permitted. We must always remember that to Dr. Stack is due the credit of initiating dental education in this city, and however the views of men keenly interested in a special subject may differ, yet, as one of his colleagues from the foundation of the Dental Hospital of Ireland, I must bear testimony to the unflagging energy and earnestness which he devoted to the cause he had so much at heart, and to which, unsparingly, he gave so much of his time. I am sure that anything I can say about the Dean will be cordially endorsed by those present who have had the advantage of his teaching. Let us hope that his example will not have been in vain, but that we all will be ready to work as keenly as he has done to make our Dental Hospital second to none in the kingdom, both as a charity and a teaching institution.

At the inaugural meeting of such a society as ours it will not be amiss to say something as to its special aims and objects. I have already said that I look forward to its performing a very important

* Delivered to the Dental Students' Society of Ireland.

part in your education. For although your teachers may devise lectures and demonstrations, which to us may seem models of clearness, and leave nothing to be desired but for the student to apply the principles we have inculcated in practice, yet how often do we find by some chance question, on the student's part, how wide of the mark have all our labours gone. The lesson we have sought to convey has not gone home, there is still something wanting; that something, I believe, will be found in this society. In order to bring forward communications the members must read, and not only read, but think over what they have read, in order that the process of digestion and assimilation may take place in the brain as in another more material portion of your organism. It is not in the nature of things, nor is it indeed desirable that your communications should be original; you must walk before you can run. But it will be of great profit, not alone to yourselves, but to your fellow-members, if each man in his turn will work up and digest what the various authorities have to say on such subjects as the preparations of cavities; methods of inserting gold, amalgam or white fillings; the preparation of mouths for dentures; taking impressions; regulating devices, or any of the various problems that confront us in everyday work. Believe me, on all these subjects, we never know so much that there is nothing left to learn; and, if I may make a confession, I am more often attracted by these articles in the journals on subjects of everyday work, such as the best way of inserting an amalgam plug, than by a learned paper on a subject that does not so directly concern us. Not that I wish for a moment to be understood as undervaluing scientific work, which I regard as the foundation upon which all our practice rests; but I wish to impress on the members the interest which attaches to what may seem to them trivial details. Exhaustive reading on all subjects is not within the reach of students, but it is possible for a man to master, to a certain extent, one special point, and then to make it instructive to his fellows. Fortunately the day has long since passed when the laboratory processes and operative technique were jealously guarded as trade secrets, not to be revealed outside the precincts of the master's house; our information on any subject is now fortunately common property, and, as in other liberal professions, we are anxious to exchange our views with one another on matters of common interest, with the natural result of mutual improvement and a higher

standard of excellence in our services to the public. And while engaged in the exchange of our ideas on topics of professional interest, we insensibly get to know one another better, and thus a further good results from our intercourse. Such a society as ours will tend to round off the corners that so often make their appearance when a man works apart from his fellows, we learn to be tolerant of each others views, and, instead of thinking that our methods must of necessity be the best, we learn to reflect that in many cases, after all, perhaps, we have not got hold of the right end of the stick.

If the spirit which I have barely touched on takes root and flourishes, as I trust it will, in our society it will lead to an unwritten code of professional ethics, the fundamental principle of which is that you act towards your professional brother as you would like him to act towards yourself. This is a subject that you will realize more fully when you leave these walls and engage in the actual battle of life in practice, but as you cannot too soon accustom yourself to the habit of forbearance in passing judgment, I would remind you that patients from various motives will seek to get adverse criticisms from you on the operations and methods of your professional brethren. You may hear that your professional brother has failed in extracting a tooth to-day, remember that from causes beyond your control the same accident may happen to you to-morrow—his filling has come out, don't be too sure that yours will never do likewise because you don't happen to have heard of it, for as a rule our failures don't come back. Or again, don't flatter yourself that you are the only man whose patients don't leave him, many patients wander all round the city to different practitioners, but if you have done really good work for them they will find it out and come back to you in the long run. I have laid stress on these facts of practice in order to show you the necessity of a large measure of charity in our estimate of each other's work, and although it applies, perhaps, more fully at a later stage in your career than the present, still the hospital is more or less a miniature world, and the manly and straightforward principles that you endeavour to act up to here will stand you in good stead in the wider sphere for which your hospital training is the preparation.

Now if I, as your president, may offer you some advice as to the working of your meetings, I would strongly urge you to rely on your

own members for communications. The staff of the hospital have their own society where they can unburden themselves of their surplus information, and the discussion will be freer and more spontaneous if here you are unfettered by the presence of senior men. If, on the contrary, you look to some of the staff to supply the materials of your meetings, your members may get shy of making remarks, and thus defeat the object for which your society was formed. I have offered a prize for the best essay of the session, and in doing so have hoped to stir up a healthy spirit of competition. There is no reason, if it seems good to you, why some of the funds of the society should not be devoted to a similar purpose, so that more than one member should have a chance of earning distinction. I merely throw this out as a suggestion to be acted on or not as your Council thinks fit. There is one important aspect of this society which it shares with all medical and college societies, viz., that it forms a most useful school where a man may learn the art of giving his ideas shape in words, I mean the art of debating. To be a ready speaker is not given to all; but much may be done by practice. Look up the subject of the evening beforehand, and by all means don't let an occasion slip without saying something; one never knows how a chance remark, by opening up a new aspect of a question, may lead to a most interesting discussion, but bearing always in mind that your remarks must be addressed to the chair, and thus interest the entire meeting.

With a view to collecting materials for your meetings your work will have an additional interest, you never know when a specimen may crop up in the extracting room, or a case in the filling room, that may properly find their way here among the casual communications, and remember how much the value of any case is enhanced by accurate notes taken at the time while all the facts are fresh in your mind and the patient is there to be cross-questioned. And I would also have you bear in mind that there is a vast amount of material to be drawn upon in the mechanical laboratory, wrinkles and methods familiar enough perhaps to you but often new to others. And last, but not by any means least, instructive cases from the anæsthetic room.

It was suggested that, in addressing you this evening, I should endeavour to give you some hints as to the form in which to present your communications, in other words, to induct you into the

mysteries of paper making. It is not such a formidable affair as it seems at first sight. First of all, as they say in the cookery books when treating of the manufacture of hare soup, you must catch your hare ; you must determine what it is you want to write about ; if you have a specimen that is fairly uncommon, write a short but accurate description of it, omitting no essential detail, then any facts in the patient's history which might account for its occurrence, any special operative procedure by which you obtained it ; refer if possible to the literature of the subject in the journals and various dental authors, such as Tomes and Salter, Coleman, Smale, and others. Note how your specimen corresponds with or differs from what they have described. If it admits of a microscopic section being made from it, either do it yourself or get some friend to help you, as it greatly increases the interest of any communication.

Again, suppose you take up some subject that you have been thinking over or working at, such as replantation or root filling, you may adopt the historical method and go back to John Hunter and describe his methods, or if you wish to begin at the beginning go to the library of the College of Surgeons and find out what Celsus and Hippocrates had to say on such subjects, but for all practical purposes a retrospect of thirty or forty years will be quite sufficient ; then see how the statements of different authors vary, endeavour to reconcile them, or, if such a course is not possible, show why they must of necessity differ, draw your own conclusions as to the treatment you prefer, a good discussion among the members of the society over such debatable material will then settle the whole question.

Writing good papers, like debating, requires practice, don't expect too much at first, stick to it steadily and it is wonderful how you will improve, it will help you to focus your information, systematize your reading and, not the least important consideration, give you a very considerable lift in the examination hall.

I trust that the few hints I have given you, though I feel they are far from perfect, may be of some use, and it only remains for me to wish that the first session of the Students' Society may be a most successful one.

DOLOR POST EXTRACTIONEM DENTIS.

By ARTHUR SHEUER, Dental Surgeon, Teplitz.

EVERY dentist, who has extracted many teeth, knows when extractions are called for because of pain due to an inflamed pulp that these are not followed by after pain ; he is aware that extraction after chronic periostitis is frequently connected with slight after-pain which, as a rule, soon ceases ; but he knows too that when there has been recent purulent periostitis, which may have originated in chronic periostitis, that then the extraction of the diseased tooth is followed by pain continuous for hours afterwards.

Rinsing with warm water is recommended ; the patient returns after a short time and asks for a radical anodyne to arrest the pain. If the alveolus is syringed with hot water, or with a warm solution of carbolic acid, the pain decreases a little, but still it is worrying for some hours ; and yet we have a sovereign remedy which will act almost instantaneously.

The books at my disposal tell us nothing of dolor post extractionem. Professor Dr. von Mettnitz's work (Vienna, 1891), describes fully only bleeding after extractions, and the monographs by Professor Dr. F. Bush and Professor Dr. Holländer ("The Extraction of Teeth") treat merely of the technic and indication. Only the "Handbuch der Zahnheilkunde" (Vienna, Hölder, 1893), edited by Professor Dr. Scheff, gives explanations (ii. vol., 2 Abteil, page 243), which are accepted in their entirety by Paul de Terra, of Zurich, and in his book, "Repetitorium der Zahnheilkunde," he answers the question : "Welche bewandtniss hat es mit dem sogenannten Zahnlückenschmerz ?" in the following manner :— "Dolor post extractionem, better called alveolar neuritis, is to be traced chiefly to an inflammation of the prolongation of the alveolus, especially in cases of inflammation of the periosteum. Tearing of the periosteal nerves, stretching and expanding the bony walls, an insignificant hardly proven fracture, may contribute to the after-pain, which may torment the patient for several days. Very often the cause is attributable to the gum being stretched over the sharp edge of the alveolus which then becomes inflamed through the constant friction. Therapy is rather powerless in this case, and the treatment of this affection is but palliative. The pain ceases after a short time without any help from without ; rinsing with ice water, lancing the

gum, subcutaneous injections of morphine, antipyrine internally, etc., may be employed in cases of the most violent pain."

In English and American papers, the pain following extractions is frequently mentioned, and to arrest the same many proposals made, and numerous remedies given.

In *The Dental Cosmos*, 1892, Ellis Canning recommends syringing the alveolus with a hot solution of carbolic acid, 15·100; while, according to *The Western Dental Journal*, 1894, no dentist should be without nitrate of amyl and nitro-glycerine, the first to be inhaled for some seconds, and of the other a drop of a one per cent. solution to be taken in a glass of water. In the *Items of Interest*, 1893, Dr. Genese recommends a preparation of one part of chloroform and three parts of tincture of pyrethrum; while Dr. Chupein, according to *The Dental Office and Laboratory*, 1894, employs wool pellets saturated with aconite and chloroform.

For the last five years, after every extraction followed by pain, I have wiped out the alveolus with concentrated carbolic acid. For this purpose I wrap a little Brun's cotton-wool round the points of a pair of curved tweezers, dip it in acid. carbol. c.c., and wipe out every alveolus properly. The success is almost complete, and pain having lasted for hours is instantly allayed, a fact which I have experienced with patients coming from the neighbourhood of Teplitz. Care should, of course, be taken that the skin of the patient's face does not come in contact with carbolic acid; should this however happen, wash it off at once, and rub the spot with alcol. rectific. The patient should rinse the mouth immediately after the alveolus has been wiped out.

The use of undiluted carbolic acid has no evil consequences whatever, as thousands of cases have shown. In *The Polyclinic*, 1897, Dr. Oscar Allis, of Philadelphia, confirms, likewise, on the strength of repeated experiences, that even the application of an over-dose of pure carbolic acid to abscesses, exposed tissues, burns, etc., is less dangerous than a diluted solution.

At the naturalists' meeting in Vienna, 1894, I personally gave information to numerous colleagues of the use of concentrated carbolic acid, and also later on at several dental meetings I drew attention to it. I received, however, no communications regarding it, only Dr. Von Reuss, Surgeon, of Berlin, has fully confirmed my observations.

The effect of carbolic acid as an analgesic is well-known, it therefore forms part of all devitalizing pastes. Rössler's mouth wash, in such high favour in Austria, is an alcoholic solution of carbolic acid, and the toothache originating in exposed root dentine, which is attacked by the micro-chemical processes of the mouth, will disappear quicker after the use of carbolic mouth-washes.

If my method of treating "dolor post extractionem" should be practised by any practitioner, I should be pleased to be made acquainted with his observations.

Reports of Societies.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

THE first ordinary meeting of this session was held in the Medical Institution, on October 18th, at 7.30 o'clock.

Mr. J. S. DICKINS (President), in the chair; there was a fair attendance of members.

The HONORARY SECRETARY read the minutes of the last meeting, which were confirmed.

The PRESIDENT then gave the following address.

Gentlemen,—The French phrase, *esprit de corps*, if used as the motto of this society, and translated into action by us all, would result in a benefit, not only to us as individual members of our association, but possibly to the profession at large. We may exhibit this spirit by a regular attendance at our meetings, and also by bringing friendly pressure to bear upon those members who do not come amongst us so frequently as we desire. There is plenty of ability and experience in this district to maintain a very healthy life in our society, and though we cannot all be "Admirable Crichtons," we may each do our share by adding our quota as occasion offers. It not in preparing and reading a paper or giving a demonstration, our hardworked secretary will be delighted, and saved a good deal of trouble, if you will bring forward a larger supply of items for discussion under the head of "Casual Communications, or Incidents of Office Practice," as our American brethren put it.

Though some may consider such things as trifles, it must be remembered that trifles make perfection, and that perfection is no trifle. Our daily work, being a mixture of science and art, gives us

opportunity for a display of very varied tastes and talents. Fortunately for a good many of us, some dentists make a hobby of a part of their work, and by so doing bring to a greater perfection the different phases of our speciality. There is just a little danger that what is so familiar to us we are apt to consider equally so to others. But as it is not possible for us to think or act alike, neither do we work or play alike. Therefore will you please give us the benefit of the new ideas or experiences resulting from your various experiments and investigations? They will meet with a thankful and appreciative reception, which will be a sufficient reward for your trouble if you adopt the motto "Esprit de Corps."

Mr. A. DRAKE, L.D.S., Esq., was balloted for and elected a member of the society.

The PRESIDENT then called upon the members for casual communications, etc.

Mr. F. ROSE said: Case 1 illustrates what can be done with crown work to restore a broken-down and useless set of teeth to full efficacy.

When presented to me first, as the models show, the condition of the teeth was as follows: Left upper first and second molars, the two bicuspid on both sides, all the upper incisors and the right canine were hopelessly decayed, and the pulps either exposed or disintegrated, except in the two left upper molars, which I succeeded in retaining alive. The pulp of the right upper first molar was exposed, but sufficient tooth substance remained to make a good filling; this I did with amalgam, after treating and filling the roots. The left canine and right second molar were the only sound teeth in the upper jaw. In the lower jaw both the first molars and second bicuspid were decayed almost down to the cervical margins; the second molars were quite sound; the first bicuspid were badly decayed, but capable of being saved and stopped; and the lower incisors and canines much decayed interstitially; there were altogether eight cavities in these teeth.

I crowned all the upper teeth with the exception of the right molars and left canine, and by so doing was able to bring almost into the arch the misplaced left lateral.

The crowns of the teeth were Buttner's; the first bicuspid gold and porcelain box crowns; and the molars and second bicuspid all-gold box crowns.

In the lower I adjusted all-gold box crowns on the first molars and second bicuspid ; treated roots and filled with amalgam the first bicuspid, and filled the front teeth with gold.

The case was very difficult, owing to the unusual shortness of the bite at the back of the mouth. The patient was a somewhat anæmic girl, but otherwise strong, aged $15\frac{1}{2}$ when she first came.

Case 2.—This was a boy aged $13\frac{1}{2}$, with prominent and very crowded upper incisors, the laterals being in the normal arch, and the centrals very much forward ; the right standing further out than the left. The lower teeth were much crowded in front, and six-year molars badly decayed, also the right bicuspid.

The case was very puzzling, because the left upper central was a pulpless tooth, very discoloured, and the lateral very much decayed. This made me hesitate to sacrifice the sound lateral, so I sent the patient to Mr. Mansell, and as his opinion coincided with mine that the sacrifice must be made, I extracted the right lateral, and of course the decayed lower six-year molars, and intend to crown the left central and lateral when the boy is a little older. The models give no idea of the case. I have seen the patient since, *i.e.*, about five weeks after the extractions, and the centrals are already much improved in appearance without the assistance of a plate, which I fear a little to apply owing to the pulplessness of the left central. I will report further on the case as it progresses.

Mr. D. W. PARSONS showed models of a case of open bite. Four years ago the patient, a girl of 15, came to him complaining of inability to close her front teeth. Her incisors, as the models passed round showed, were separated about half an inch apart. The treatment adopted was to remove some broken-down six-year molars, and then to leave the case to nature. The result, after four years, showed great improvement. The incisors are now only separated about $\frac{3}{20}$ ths of an inch, and probably by a little grinding of the 12 year molars that can be almost cured.

Mr. F. GASKELL handed round models of the mouth of a man aged about 40. The patient is edentulous, and, in addition to a very marked open bite, there is well-marked inferior protrusion making it almost impossible to supply him with anything satisfactory in the way of prosthetic work. The canine region in the upper was about opposite the second molar region in the lower.

After a very good discussion on the above-mentioned cases, the President called upon Dr. Permewan, who read a paper on "Empyema of the Antrum of Higmore," of which the following is an abstract :—

The variety of empyema of which he wished to speak mainly was chronic empyema. Acute inflammation was due almost, though not exclusively, to disease spreading from the teeth. It was attended with marked and obvious symptoms, and was easily curable by ordinary surgical means. In chronic empyema the case was very different. The symptoms, if one were unacquainted with them, did not obviously suggest the existence of the affection, and, indeed many cases were overlooked for years. Though the causes were in the main dental, the symptoms were nasal. A unilateral, offensive discharge, of which the odour was perceived by the patient, often intermittent in flow, was almost pathognomonic of suppuration in one of the nasal sinuses, and, in the great majority of cases of empyema of the antrum. Pain was almost absent, though neuralgia of one or other branches of the fifth nerve was not uncommon. It was important to remember, as Heath pointed out long ago, that neuralgia of the supra-orbital nerve often meant disease of the antrum. The diagnosis suggested by these symptoms could only be certainly established by the puncture of the antrum. Transillumination was very deceptive, but puncture was certain and usually easy. The writer had never failed to find pus in the antrum on puncturing, though one must remember that sometimes the pus did not flow through the opening at once, but on washing out the antrum escaped by way of the nose.

The puncture for diagnosis was also a part of the treatment. The main question was as to the seat of the opening. Dr. Permewan had invariably punctured through the alveolus, at the region of the first molar or thereabouts, usually with a hand-drill, but of late by means of a drill worked by a dental engine. The wall of the antrum in this part was usually quite thin, but he had recently met with a case where $\frac{3}{4}$ inch of bone had to be penetrated before reaching the antrum. Openings have been advocated and practised in other places—the canine fossa, and through the inf. meatus of the nose. Neither of these places gave perfect drainage, and were, in the writer's opinion, inferior to the alveolar opening in convenience. He would not hesitate to sacrifice a healthy tooth to get room for puncture in

this region. Having made a sufficient opening the only other indication of treatment was to wash out and keep clean the antrum till the suppurative process stopped. That was the ideal result, but one in his experience but rarely reached in these chronic cases. He believed if practitioners were quite frank in the matter they would agree that a cure was very rare. But the inconvenience could be reduced to a minimum by persistent and careful cleaning, and if a cure were looked for more radical measures could be taken. He was bound to say, however, that even after these measures it was not always found. Such measures were the making of a large opening in the canine fossa, exploring every part of the antrum with the finger, and applying appropriate treatment according to the exact condition found—whether that condition was simply a thick pyogenic membrane, or the presence of carious or necrosed bone. But like all bony cavities the antrum was very slow to resume a healthy condition, when once chronic suppuration had existed in it for any considerable time. It was necessary to emphasize the point that while treating the disease the cause should not be lost sight of. The teeth should of course be thoroughly overhauled, and any intra-nasal disease receive attention. In this connection he might state that antral disease was sometimes secondary to, and symptomatic of disease of the frontal sinus, and that it was hopeless to expect a cure of the antral condition till the original source of the suppuration had been removed. In conclusion, Dr. Permewan invited suggestions as to details of treatment, and results so far as different gentlemen had experienced them.

DISCUSSION.

Mr. E. J. M. PHILLIPS always saw antrum cases in conjunction with a surgeon, and if mechanical appliances were found to be necessary he made them, and then handed the patient over to the surgeon for further attention. He had seen a number of cases of the chronic variety which had resulted from a suppurating pulp in an upper tooth, which had led on to the condition of the antrum without the patient being aware that anything much was wrong. These generally were very difficult to treat. He had noticed a number of such cases amongst hospital nurses. He had also noticed the frequency of supra-orbital neuralgia in chronic cases. Mr. Phillips thought it better in all cases to sacrifice a tooth, even if sound, to assist in drainage.

Mr. T. MANSELL had found a dilute solution of H_2O_2 very efficacious as a douche. He considered that an opening over the six-year molar was better than in the canine fossa. He did not think it necessary to make a tube, for he found that a solid plug of vulcanite did just as well. It was removed during syringing, and then replaced. He even found that a plug of gutta-percha served the purpose in some cases.

Mr. J. A. WOODS differed from Dr. Permewan, and some of the other speakers in the question of removal of a healthy tooth, and thought it much better to open into the antrum through the canine fossa or further back. That he thought was the opinion of most dental authorities.

Mr. J. ROYSTON advocated sanitas as a wash in antral cases, and agreed with Mr. Mansell that over the six-year molar was the best region to make the opening, if there was no tooth to be removed. He was of the opinion that the pathology of the mucous membrane in chronic empyema was not fully understood.

Mr. R. EDWARDS explained the importance of free drainage, and that in the most dependent part ; but even a tooth socket may not drain the cavity fully on account of the frequency of partial septa on the floor. He had one case at least of the chronic variety that seemed to do very well with a 10 per cent. solution of silver nitrate. It increased the discharge at first, but soon showed beneficial results.

Mr. D. W. PARSONS thought that a good many cases arising from teeth were rather between the mucous membrane and the floor than truly in the antrum.

Dr. PERMEWAN then replied to the various points raised in the discussion, and after a vote of thanks, proposed by the President and seconded by Mr. R. Edwards, the meeting terminated.

DENTAL STUDENTS' SOCIETY OF IRELAND.

THE opening meeting of the above newly formed Society was held in the Dental Hospital, Dublin, on Wednesday, October 12th, when the PRESIDENT, A. W. W. Baker, M.D., F.R.C.S., L.D.S.I., read his inaugural address (see p. 489).

The PRESIDENT then called upon Dr. Story to read his paper on "The Six-year Molar," upon which there was considerable discussion.

THE HONORARY SECRETARY (D. L. Rogers) showed a microscopic section of an epithelioma taken from the lip of a patient in the City of Dublin Hospital, aged 18 years, by G. Jameson Johnstone, M.D., F.R.C.S.I., and said the previous earliest age on record mentioned by Bland Sutton was 25 years.

There was a large attendance of students and visitors, and the meeting was very successful.

News and Notes.

MR. DENCER WHITTLES, L.D.S.Eng., has been appointed dental surgeon to the General Hospital, Birmingham.

WE regret to notice the death of Mr. R. J. Shiach, L.D.S.Edin., of Pretoria, and brother of Mr. Gordon R. Shiach, of Elgin.

WE regret to notice the report of the death of Dr. De Trey, of Zurich.

ON August 9th of this year Dr. Gardner Quincy Colton, through whose instrumentality nitrous oxide gas was first used in dentistry, died in Rotterdam, Holland, from a complication of diseases brought on by old age. Dr. Colton was born in Georgia, Vermont, February 7, 1814. In 1842 he entered the College of Physicians and Surgeons, and later studied in the office of the late Dr. Willard Parker. Two years after he began to deliver lectures on Physiology and Chemical Phenomena, and in 1884, when lecturing in Hartford, Connecticut, and showing the effects of nitrous oxide gas on persons, Dr. Horace Wells was impressed with the possibility of using the gas in dentistry. The next day Dr. Colton administered gas to him, and he had a tooth extracted. In 1849 he went to California, where he searched for gold and practised medicine among the miners. With a competence he returned to the East, and went about the country lecturing, telling his audiences of the anæsthetic properties of the laughing gas. In 1863 he established

an office in the Cooper Institute. A few years later was able to visit Paris with a record of 20,000 administrations. Returning to America he opened offices in Philadelphia, Boston, Baltimore and several other cities, and thus, through his energy and success, the use of nitrous oxide gas as an anæsthetic became thoroughly established, and dentists throughout the length and breadth of the land began to use it.

IN the New South Wales Parliament, on August 18th, Dr. Graham, by leave, brought in a bill to provide for the registration of dentists qualified to practise in New South Wales. The bill was read the first time, and the second reading was taken on September 6th, but led to a long discussion; however, the bill got into committee, but there was again much talk and little progress till the matter was adjourned.

THE Christchurch and Bournemouth Guardians have granted 50s. to a young widow, already in receipt of out-door relief, towards the cost of a new set of false teeth. We are glad to note that this proposition was carried by 13 votes to five, the very sensible view being taken that the widow would be more likely to be able to earn her own living if her health were improved. A morning paper thinks if this custom becomes general "the dentists should reap a rich harvest"!!

THE Calendar of the Royal College of Surgeons of England, which has recently been published, states that there are 1,283 Licentiates in Dental Surgery, being an increase of 97 on the previous year. During the year 142 candidates were examined, 42 of whom were referred. The fees received amounted to £1,050, of which the examiners received £596 8s. There are four examiners in general and four in dental subjects. Under the new regulations two candidates presented themselves for the preliminary science examination, one passed and one was referred. The number of Fellows of the College is 1,195 and of members 17,199, compared with 1,191 and 17,333 last year. The income of the College for the

year amounted to £26,613 12s. 5d., the largest item being fees paid by candidates, viz., £16,515 1s. 6d. The expenditure was £25,406 7s. 9d., the chief expense being in connection with the different examinations.

THE following entries for 1898 to 1899 at Medical Schools is abbreviated from one given by the *Lancet* :—

LONDON.

					Full Students.	Dental.
St. Bartholomew's	..	..	..	..	100	1
Charing Cross	..	..	..	..	24	24
St. George's	..	..	..	..	50	0
Guy's	..	..	..	..	81	53
King's	..	..	..	..	28	0
London	..	..	..	..	60	0
St. Mary's	..	..	..	..	65	0
Middlesex	..	..	..	..	20	14
St. Thomas's	..	..	..	..	62	0
University	..	..	..	..	34	0
Westminster	..	..	..	..	12	1
Royal Free (School for Women)	..	..	..	..	45	0

PROVINCIAL.

					Full Students.	Dental.
Birmingham (Mason College)	..	..	..	..	23	15
Bristol (University College)	..	..	..	..	13	1
Cambridge University	..	..	..	..	127	0
Durham University	..	..	..	..	30	6
Leeds (Yorkshire College)	..	..	..	..	24	0
Liverpool (University College)	..	..	..	..	52	18
Manchester (Owens College)	..	..	..	..	66	18
Sheffield (University College)	..	..	..	..	9	0

AT the Blackburn County Court, on October 24th, his Honour Judge Coventry heard a claim for £20 brought by Mary Ann Kay, weaver, against Joseph William Butterfield, chemist, 33, Market Street, Darwen, for loss, damage and injury sustained in consequence of the alleged negligence and carelessness of the defendant in extracting teeth. Plaintiff said she went to the defendant to have three teeth taken out. Defendant used a substitute for cocaine on the gums, but he had to try three syringes before he could inject it. Her face afterwards became very swollen. She had much pain, and had to stay off work and consult a doctor. The latter was attending her for nine weeks. Cross-examined, witness denied there was

anything the matter with her mouth before the teeth were extracted, or that she caught a cold afterwards. Dr. Wallers said the trouble in her mouth, which sprang from septic poisoning, might have been caused by an improperly cleaned instrument, or an unhealthy condition of the mouth, or might have been the result of other causes. His Honour at this point non-suited plaintiff, holding that there was no direct evidence that the syringe had caused the septic poisoning.

It is said that during the physical examination of the militia recently held, prior to mustering the men into the United States service, a large per cent. were rejected on account of defective teeth. Yet a bill recently introduced in Congress providing for the appointment of dental surgeons in the United States army has failed to pass. In our own country, with the need quite as great, a bill of this character has not failed to pass, for the simple reason it has not even been introduced.

IN August, a gentleman, aged 66, at Bolton, fell on a kerbstone in a fit and swallowed a portion of his denture. On October 19th he died, and a post-mortem examination showed the denture imbedded in his left lung.

SOME time since an account was published in a German dental journal of the death of a patient from hæmoptysis after swallowing a denture, the post-mortem showing that it had by pressure opened up the inferior thyroid artery. Both these lives would probably have been saved by the use of the Röntgen rays.

NOT rarely patients fancy wrongly that they have swallowed their dentures, and the symptoms following have been known to simulate those associated with the actual presence of a denture lodged in the œsophagus. Fortunately the discovery of the denture in some outlandish place ends the patient's trouble. In one case, however, some days intervened between the two events, though ultimately they were discovered hidden behind a chest of drawers. This interim is rather

a trying period for the patient, and a newspaper reports that a patient recently died at a New York hospital from fright induced by the belief that during her sleep she had swallowed her denture, since she was unable to find it in the morning. The female attendant who undressed the body found the denture lodged in her underclothing. The post-mortem disclosed no cause for death.

AN unfortunate charge has been brought against a dentist of Adelaide. A child died after he had extracted some temporary teeth, and a tooth was found in the bronchus. The jury were "unanimously of opinion that the tooth found in the lung was extracted by Mr. Thomson, and caused the death of Maud Catchlove." Mr. Thomson, however, claims that he has in his possession and has shown the two teeth which he extracted. He asks for exhumation of the body, which would show that neither of the teeth he extracted was the one found in the bronchus.

A DEATH has just taken place in New York from hæmorrhage following extraction of teeth. A tooth was extracted at the office of the Waterbury Dental Company, and severe bleeding followed. The representative of the company then extracted two more sound teeth, as he said this would allow him to use "a compressor," and as the "compressor," when applied, failed to act and other means were equally unsuccessful, the result which followed is obvious.

L'Odontologie publishes an account of the following interesting case:—"A tailor of good health and moderate habits, except excessive smoking of cigars—used about 20 cigars in a day and about 15 to 20 lucifer matches for every one, as he frequently interrupted the smoking during his work. For the last 20 years he inhaled the vapour of phosphorus given off daily by over a 100 matches. He first noticed pain in the right eye, swelling followed, involving the whole side of the face. An abscess burst into the oral cavity and yielded a free flow of pus. He grew worse, and the superior maxilla was finally removed, as it was believed to be the cause of phosphor-necrosis. In a few months a new operation was necessary,

but the patient collapsed, dying in delirium of meningitis. The patient had never worked in a match factory, but his teeth were in so bad a condition that they offered free access to the vapours of phosphorus given off by the lucifer matches."

TWENTY-FIVE DOLLARS, a blood-curdling oath of secrecy and a bond for a large sum of money should the oath be broken, is the price many Canadian dentists are said to have paid for the following method of extracting a living pulp without pain:—"Take a little piece of spunk, dip in alcohol or some other good solvent of cocaine, then touch with the moistened spunk some cocaine crystals, place this in the tooth cavity, and place over it a piece of soft vulcanite. A broad instrument applied to the vulcanite with a steady, firm pressure will cause the cocaine solution to be absorbed by the dentine and pulp. If you have a layer of sensitive dentine over the pulp, remove by means of a sharp bur, and apply a second treatment of the solution to the exposed pulp. After a few minutes of steady pressure the pulp may be removed without pain and the canal or canals filled at once before sensation returns, which will not be for about 15 minutes." Try it on your next gratuitous patient. They will probably bless you and depart, happy or otherwise.

MR. DENCER WHITTLES claims to have had good results in treating pyorrhœa alveolaris with the green iodide of mercury, applied by means of pointed orange wood sticks.

IN the *Zahnärztliches Wochenblatt*, Dr. A. Salamon, of Hamburg, narrates a case of necrosis of the centre of the hard palate due to the pressure of an upper denture. This denture, a full suction upper, had been inserted 15 days after the removal of the remaining molars, and had two large oval suction chambers situated on either side of the middle line, the intervening portion forming a ridge. Four days after its insertion a sore formed on the gum, and the mechanic who had made the plate eased the pressure and sent the patient to a medical man. In the

course of four weeks a sequestrum separated spontaneously of the size and shape of the projecting ridge. Fortunately it did not perforate the floor of the nose, and in about three weeks the wound healed. Most of the teeth in the maxilla had become loose and dropped out, whilst those in the mandible remained firm. Hence, Dr. Salamon suggests that there was some trophic disturbance of the tissues of the maxilla, and thus the pressure bore on a locus minoris resistentiae. There was no history of syphilis.

THE editor of this journal recalls the fact that a similar case was recorded by Detznell in the *Deutschen Vierteljahrsschrift* for 1879, when a thin sequestrum of bone separated from the palate of a young woman after wearing an upper denture with a suction chamber. These cases are yet another argument against the use of the suction chambers, the use of which no one has yet scientifically explained.

AT the last meeting of the Medical Council, Mr. Charles Tomes, pressed to give an instance of the use of the study of medicine to dental students, mentioned the difficulty of diagnosing between mumps and swellings of dental origin. The following case, reported by M. Heydenreich to the *Société Médicale de Nancy* and recorded in the *Presse Médicale*, shows that this differentiation may be a matter of grave moment. A man, 33 years of age, was brought to his clinic said to be suffering from mumps. There was high and persistent fever, rising to 104° F., with agitation, delirium, stiffness of the jaws, and swelling over the right parotid extending into the neck. When M. Heydenreich saw the patient, on the third day of the grave symptoms, the condition seemed to have improved. The temperature was from 102.5° to 103.4°, consciousness had returned, and the swelling was strictly limited to the angle of the right jaw. The patient could open his mouth, and a drop of pus escaped by the side of the jaw. All the teeth were in situ. It was certainly a case of suppurative osteitis of the mandible, due to the eruption of a wisdom tooth. There was not at this time any indication calling for operative measures. The next day, however, the patient became semi-prostrate, and in the evening the temperature rose to 104.9° F.; on the fifth day he was taken in a moribund condition

to the hospital. There was complete left hemiplegia. A free incision was made by means of the thermal cautery as far as the zygoma, but no pus was found. He died next day at midday, the temperature being 98.9° F. The autopsy disclosed pus on the right side between the cranial vault and the meninges up to the level of the convexity, toward the median region, and suppurative osteitis of the cranium. On opening the meninges, a bed of very thick greenish-yellow pus (showing meningo-encephalitis) was laid bare. There was no lesion in the interior of the brain.

WAS it hysteria or a reflex neurosis? The *Münch. Med. Wochenschrift* states that a girl, 24 years of age, had suffered two-and-a-half years with a "lameness" of the right arm, which dated from a fall causing a fracture of the forearm. Remedies were of no avail. Recently she visited a dentist to have some teeth filled, and he advised the extraction of a much decayed right upper wisdom tooth. This was done, and on the following day the young lady reported joyously that she had regained complete movement of the arm!!

J. CUSTER, Jun., in the same journal, shows that the toxic power of cocaine when injected hypodermically depends less on the quantity injected than on the strength of the solution used: thus the same quantity of cocaine in a 0.2 per cent. solution is five times less poisonous than in 5 per cent. solution. He claims that hydrochloride of tropacocaine has an anæsthetic power fully equal to that of cocaine hydrochloride, but it is nearly three times less toxic. The strength of the solutions of tropacocaine used by Custer is the same as those of cocaine used by Schleich, viz. :—No. 1 solution 0.2 per cent., No. 2 solution 0.1 per cent., the No. 3 (0.01 per cent.) is quite unnecessary owing to the lessened toxicity. The vehicle is a 0.2 per cent. solution of common salt. Custer leaves out the morphine contained in Schleich's solutions, preferring to give it, if required after the operation, as a separate hypodermic injection.

THE *Scientific American* states that a German patent has been taken out for the hardening of gypsum, which furnishes very

satisfactory results. Either burnt gypsum is prepared and mixed with the liquid named below, or else the finished articles of hot gypsum, or of mixtures of gypsum and other bodies, are impregnated by painting with the fluid. The fluid consists of a solution of ammonium triborate in water. For this purpose boracic acid is dissolved in warm water and a certain amount of ammonia is added, whereby a substance soluble in water results. The saturation of the gypsum, or the painting of the plaster articles, is carried out in the cold. The objects are subsequently rinsed off and dried. The surface becomes very hard after two days and insoluble in water, while the induration in the interior advances more slowly.

MY DENTIST.

By L. H. B.

He greets me smiling in his lair,
I sit me down upon his chair,
And for the sacrifice prepare.

He shakes his head, but speaks me fair ;
" And though," he says, " I am aware,
Your teeth are quite beyond repair,

" Yet eat you must and talk you will,
And, therefore, I am ready still
On you to use my art and skill.

" To save a few, extract the rest,
To put your courage to the test,
And prove that my advice is best."

Then with an air resigned and calm,
Resembling Gileaditish balm
(Which leaves me with an inward qualm)—

He takes a tiny point of steel,
The which he means to make me feel ;
In motion sets his fiendish wheel.

A noise that's like a water-mill,
A buzzing throb that makes me ill,
And then he has begun to drill.

To mitigate this strange sensation,
And lull the pains of operation,
He fills the gaps with conversation.
And then he places in my mouth
A cloth, productive of a drouth,
More dry than any in the south.
And next, with mingled care and haste,
He swift prepares a glittering paste,
Of silvery look and acrid taste.
At last the cavity is stopped,
And when I from the chair have popped,
And he his heated brow has mopped,
Glad to receive my own release,
I hope these interviews may cease,
And, shaking hands, we part in peace.

A CURIOUS MIND :

OR "EUROPEAN DENTISTRY ONLY AS I SAW IT, AND THE
IMPRESSION IT LEFT ON MY MIND."

WHAT a resident in a country hesitates to attempt a casual visitor readily undertakes. We have so often read the objections of Colonials and Americans to the opinions concerning them expressed in writing by Englishmen, who have been all too short a time among them to learn true facts to substantiate their opinions, that we really wonder they go also and do likewise. Who has forgotten the publication of a book by a distinguished journalist who not long ago visited Chicago, and the outcry raised thereby? Now we are treated in the *Dental Review* to a paper on European Dentistry by a dentist who, we believe, recently travelled this and other countries as an itinerant vendor of his own specialities. His opinions are amusing, but the first extracts we give may be held to explain their distorted character. He must have landed in some curious quarters. We deal only with the portion referring to the United Kingdom.

Lost in London.

"The representative men The only sign these men have is a small brass plate on the door ; often it is simply 'Mr. Brown,' though in many cases they have L.D.S., M.R.C.S., &c., and when it

is only the plain name these men are extremely hard to find, as almost every door has a brass plate, and the architectural design of each house is very similar."

Not knowing the "real facts," why does he write at all?

"Perhaps it is well to say, too, that in a country where they are all so exclusive, not given to answering questions, but only to asking them, it is quite impossible to get at the real facts in the case."

Knowledge as well as skill is paid for. Would it were so!!

"They get as much for putting medicines in a tooth to relieve pain as they do for a filling."

Do they not sell practices in the States? Are such advertisements in *Cosmos*, &c., all bogus?

"Changes are few in that country; when once people have given their patronage to an office they seldom go elsewhere. And it is also a fact that any stranger can buy out a practice anywhere in Europe, and if he is in any sense worthy he will undoubtedly retain the full patronage of the office—so it would appear that it is the office rather than the man which needs to be established."

Ninety-nine out of every hundred dentists wish it were so.

"The fee system is another drawback to skilful operating—one guinea being the regular charge for each operation."

A country paved with gold.

"If a man has the means to have . . . furnishings in good taste, has the qualities of a gentleman, and can obtain recognition of some of the nobility, his success is practically assured, although he may have very few of the qualities of a good dentist."

He must be *prominent*.

"A very prominent dentist in Manchester, who is dean of their principal college, said to me: 'I have no faith whatever in stopping teeth, and discourage it all I can.' Another prominent dentist in Liverpool said: 'You fellows in America are killing yourselves trying to save all the teeth, and filling teeth with gold; we extract them, take an impression, and the man in the laboratory does the rest.'"

They didn't answer him.

"I made numerous inquiries concerning regulating and bridge-work, but was unable to learn anything in regard to either, and I saw nothing in the laboratories I was in to indicate that this class of work was ever done."

A philanthropist among us yet unknown !!

"One dentist in Huddersfield, a city of 150,000 population, had solved the problem of saving teeth as far as he was concerned ; said he : ' There is not one dentist here that is making any attempt to fill teeth whatever, and I am going to America to get some man who can do this work, as I cannot do it myself, and then I am going to fill teeth six months for nothing just to show people that it can be done.' "

The blind see not.

"Many of . . . dentures are made up on a metal base, but I do not remember of having seen a single one where the teeth were attached with rubber ; they are always soldered to the plates."

He should verify his facts.

"The degree of Licentiate of Dental Surgery can only be granted by the General Medical Council."

Neither is he sure of what he states.

"While a diploma from London is considered as carrying more weight, I think one from any of the schools will permit the holder to practise anywhere, although I am not sure that a diploma from Dublin would be accepted in England."

Thank you kindly.

"The dentists of the United Kingdom are, as a class, a splendid lot of men, well educated and thorough gentlemen ; while they are making efforts to raise the standard of dentistry."

And they would not have published a paper like this.

Abstracts and Selections.

RESTORATION WITH PORCELAIN IN FRACTURE OF THE TEETH.

By L. FOSTER JACK, M.D., D.D.S., Philadelphia.

A LEFT central is weakened by decay on its mesial surface. The enamel, having been robbed of its support, is weakened and becomes frail. Its possessor bites upon something unusually hard, breaking away the corner, leaving an unsightly gap. To remedy this defect now becomes our task. It is simple but tedious, for the parts are small, and it requires exactness to be rewarded with a good result.

The first step in the operation is to cut the irregular walls formed by the fracture and cavity in a direct line from the cutting edge to the cervix, grinding at the same time both the labial and lingual walls to the same plane, thus making a flat and even surface, with the exception of the cavity in the upper central portion. This is accomplished with a corundum or carborundum disk, one side of which is flat.

The next step is the preparation of the cavity. After the removal of all decay and softened tooth-structure the cavity is extended as far towards the cutting edge of the tooth as is compatible with strength, but is not made deep, care being exercised to avoid the pulp. The edges of the cavity are but slightly undercut. The floor should be nearly flat and convex if encroachment upon the pulp is feared. If the pulp is in danger, it should be protected from pressure, which may be exerted at a subsequent stage of the operation.

The tooth being now prepared, we proceed to the formation of the porcelain counterpart. The cavity in the tooth is lined with platinum foil; this is carefully removed, filled with porcelain body, and the latter fused in the Downie furnace. After stripping off the platinum the porcelain body is then placed in the cavity and ground flush with the walls.

An all-porcelain tooth-crown of appropriate colour, and corresponding in form and size as nearly to the natural tooth as possible, is selected. From this we cut with a disk that portion which is desired for substitution. This is ground on the lathe until it is sufficiently diminished in size to correspond to the absent part of the tooth.

The grinding is done principally upon the straight side, and it is not necessary to cut the labial surface if the tooth-crown has been well selected.

The relation of the outer porcelain and inner, or retaining porcelain, is obtained by temporarily fastening the two together with wax and fitting them to the tooth. The wax is then replaced by a thinly mixed layer of the porcelain body and the two parts are fused together in the furnace. The piece is cemented to place, finely fitted and polished.

Fracture of the distal portion of a right central incisor is one which would probably only occur in a child from the result of a fall.

In this case the preparation of the tooth is a simple operation. The line of fracture is made free from all irregularity and the curve trued. Two pits are drilled at the points to the depth of one-eighth of an inch in diameter, large enough to freely admit No. 19 standard wire. It may be found necessary to enlarge them laterally at the opening to receive the retaining posts. The substitute is selected and cut from a tooth-crown as described in the foregoing case. It is then deeply grooved with a diamond-shod disk, from the contact surface inward, forming an opening semi-circular in form. Into this a piece of No. 19 stiff platinum wire is fitted, the ends being allowed to protrude one-eighth of an inch. The groove is then filled with porcelain body and fused. It is then ready to be cemented into place.—*International*.

A NEW PROCESS OF FUSING PLATINUM.

By L. E. CUSTER, B.S., D.D.S., Dayton, O.

THE utilisation of the dentist's scrap platinum is an important item in the laboratory. In 1893 I described a new process for fusing platinum whereby the dentist with the Edison current could melt his own platinum scraps. This consisted of a carbon block upon which the platinum is placed, forming one terminal of an electric current, and an arc light carbon forming the other. Upon touching the platinum with the carbon pencil the circuit is closed and the current is established. Upon raising the pencil a short distance the current appears in the form of an electric arc between the carbon pencil and the platinum.

When an electric current meets with resistance to its flow it produces heat proportionate to the resistance of the conductor. It is the resistance offered by the carbon filament that causes the heat and light of the incandescent lamp. The atmosphere is practically a non-conductor of electricity, and yet under certain circumstances it allows the passage of an electric current through it. When two live terminals are brought together a current immediately flows across the junction. If now the terminals be slightly separated the electric current is not broken thereby, but continues to flow across the break in its path in the form of the electric arc. At the air space the resistance is so great that the current appears in the form

of heat and light. The heat of the electric arc is estimated at 6,000 degrees F., which, when properly manipulated, will fuse platinum.

The platinum which was fused upon a carbon block by means of the carbon pencil as previously described, is given a property of stiffness not possessed by new platinum. The platinum evidently takes up some of the carbon by which it is effected in a manner similar to the addition of carbon to soft iron, it does not affect the melting point of the platinum, but produces an ingot which possesses all the characteristics of platino iridium. The per cent. of carbon which the platinum takes up is proportionate to the length of time it is manipulated in a molten state in the presence of carbon. If the scrap can be melted together at a single striking of the arc it takes up so little carbon as not to be noticeable in the working of the ingot, and it will be soft as new platinum, but where a large quantity is fused it requires more or less time to gather the scraps into one piece, and it then takes up carbon and becomes hard, somewhat proportionate to the length of time it is manipulated in the presence of carbon.

The platinum which is melted by the carbon terminals is useful for many purposes, and this stiffness is a very great advantage. It answers for backings and makes the very best of pins for anchoring fillings with, for crown posts and for regulating appliances, and is of especial value for the frame work for porcelain bridges and continuous gum.

When it is desired to melt the platinum and at the same time retain its ductility, another method must be employed. It is this that is new. The electric arc is still employed in a manner precisely the same as for hard platinum, but instead of using carbon terminals I now employ a block of lime for resting the platinum upon, which forms one terminal and a platinum pointed metal pencil for the other terminal.

The block of lime is merely a receptacle for placing the platinum scrap upon. It will withstand the heat of the arc when used in this manner and does not affect the platinum. The electrical connections are different from those where carbon is employed. Lime is not a conductor of electricity, so instead of attaching one wire to the lime as to the carbon, electrical connection is made by having one of the electrodes terminate in a short piece of heavy platinum

wire, which rests upon the block of lime, and upon which the platinum scraps are heaped.

The other terminal and the one which is used in the hand is a rod of brass half an inch or so in diameter and four inches long mounted in a wooden handle. The rod is tipped with a solid nugget of platinum the size of a thimble.

The object in having such a large piece of metal is that it conducts heat off from the platinum tip to that extent that the tip does not melt and unite with the scrap.

It will be noticed that by the above arrangement the platinum scrap comes only in contact with the platinum tip and the block of lime while fusing. It cannot become contaminated by the tip, as that also is platinum, and since the lime is not decomposed by the heat the metal is not affected by its presence. Platinum fused in this manner is as soft and ductile as new platinum, and may be rolled or drawn into a wire as easily as new.

Every dentist who has the Edison, or 110 volt current can fuse his own scrap in this way. All that is necessary in addition to the block of lime and platinum tipped pencil is a resistance equal to about 10 or 15 ohms. Five pounds of No. 19 copper wire wound on slate (school slates) and properly mounted so as to ventilate will give this. Or, an electric oven will answer just as well if disconnected from the rheostat.

In order to get the best results it is important to make the connections proper as to the poles. It is found that the positive pole of an arc is much better than the negative, consequently the scrap platinum should be the positive and the pencil the negative pole. If the pencil should be positive, unless it is a very large piece of metal, it would melt before the scrap, whereas if the scrap be made the positive pole it melts before the pencil has even become warm.

While not more than half an ounce can be melted at once with the above described resistance, there is no limit to amount of platinum that can be got together in one mass with a larger arc by a process of fusing too. It is not necessary to have the whole mass in a fluid state at once, a part may be melted and new metal added.

—*Dental Review.*

ANCIENT JAPANESE DENTAL ART.

By T. A. LONG, Philadelphia.

At the Tri-State meeting of the Ohio, Indiana and Michigan Dental Societies, held at Put-in-Bay, Ohio, June, 1898, there was on exhibition by the S. S. White Dental Manufacturing Company, a collection of Japanese dental instruments and appliances, together with examples of their art and skill in the making of artificial dentures that was very interesting. This collection was made by their representative during a tour of nearly a year around the world in search of new fields for the sale of American dental supplies, a great part of the time being spent in Japan among the dentists and dealers in dental materials. Most of the teeth plates are made of wood, some of ivory, while the teeth are in most cases carved from a greenish-gray stone, which closely resembles the natural teeth in colour. Many plates are carved with the teeth on, all in one piece. These are presumably for the poorer classes, being cheaper to make. The stone and ivory carvings of teeth are set into the carved wooden plates and held in place by a peculiar kind of twine resembling our sea grass (so-called) fishing-lines. A hole is drilled through the teeth from one approximal side to the other and corresponding holes are drilled through the plate laterally. The teeth are placed in their respective places carved out to receive them; the string is passed through the plate and tooth alternately, and drawn up tight until all are in place. When the plate is finished no sign of the string can be seen and the fitting of the teeth into their places is so perfect that no spaces between the wood and the teeth are visible. Some of the plates on exhibition have been worn 20 or 30 years, and upon removing some of the teeth from their sockets the string is found to be very strong. They use no molars, only the eight front teeth, the grinding surface being composed of little thick-headed nails, the entire surface where the grinding is done being entirely covered by the nails. Some of the plates show that the heads of the nails have been entirely worn off from use.

The finest sets have human teeth instead of stone or ivory, and their arrangement shows a marked artistic ability in the maker. In fact, this is quite apparent throughout the entire collection. Some have the receding gums in both upper and lower plates, especially in the sets formed of human teeth. The carvings of

partial dentures from ivory show remarkable skill and artistic taste. One specimen, a single tooth, a superior lateral incisor, is a human tooth set in ivory and held in place by filling a large hole drilled through the setting laterally, with dry cotton, the moisture making it bulge out and press against the adjoining teeth. Many of the teeth are stained black. These are for married women, it being the custom in Japan for women when they marry to be allowed to wear black teeth, and is considered a mark of beauty and honour. The married women also stain their natural teeth, and an outfit is shown for that purpose. This operation has to be attended to frequently in order to keep them up to date, black and shiny. The custom is fast dying out, however, and the sale of black teeth to Japan is dropping off yearly.

Many of the plates presented to our agent were said by the dentist to be at least 200 years old. Some of them have tags attached to them stating the name of the person who had worn them. In most cases they were persons of note in the empire. The name of the dentist is also given.

The tools for wood-working consist of saws, chisels, gouges, drills, &c., and are quite crude. Their saws are very thin, not much thicker than writing paper and about a foot long, with the teeth set for a draw cut. They cut rapidly and are finely tempered. They make use of leaves and grasses for finishing woodwork, said leaves and grasses having on their surface a gritty substance resembling fine pumice-stone. They use files made of a piece of wood cut to the desired shape and covered with a piece of shark skin, the skin having a dense covering of minute sharp shells, which cut wood quite well. Their extracting instruments are very primitive and some of them perhaps as old as dentistry. One specimen consists of a piece of wood or handle about three inches long, with a strip of iron bent on itself, quarter of an inch wide like the letter U, and fastened to the handle by winding a cord around it with the handle inside of the U, and the loop end projecting over the end far enough to encompass a molar tooth. This is concealed in the hand of the operator and the loop is placed over the tooth and a twisting motion removes the tooth. A looker on would say the tooth was taken out with the thumb and finger of the operator.

Another instrument for extracting consists of a piece of steel about six inches long and a quarter of an inch wide at one end, and

half an inch wide at the other end, and about a quarter of an inch thick. The small end is made slightly concave, leaving a sharp edge on each side. The sharp edge is placed against the tooth near the neck holding the instrument so that a blow will force it upward or downward as the case may be, and the instrument is struck with a piece of lead weighing about two pounds held in the heart of the hand.—*Ohio Dental Journal*.

ABSCESS UPON TEETH WITH LIVING PULPS.

By EDWARD C. KIRK, D.D.S., Philadelphia, Pa.

UNTIL within a comparatively recent period the existence of a dento-alveolar abscess was generally believed to be pathognomonic of a dead and putrescent pulp. Acting upon that belief the practitioner felt no hesitation in at once securing access to the pulp-chamber of all cases presenting evidences of a suppurative condition involving the pericementum. The indiscriminate use of the drill developed occasional proofs of the faulty character of the accepted generalization that an alveolar abscess necessarily meant a dead pulp, the mistake in diagnosis being evidenced at times by the characteristic reactions of a wounded vital pulp.

The writer has not made a systematic search for recorded cases of this character, but certain it is that they were recognised as early as 1874, as shown by the report of a case by Dr. E. T. Darby in the Proceedings of the Odontological Society of Pennsylvania for 1879. Occasional references to cases of alveolar abscess upon teeth with vital pulps are found in dental periodical literature subsequent to the date named, and there is reason to believe that the possibility of such a condition is now pretty generally recognised by the dental profession. Dr. W. E. Walker reported three cases at the annual meeting of the Mississippi Valley Dental Association in 1895, and these again with two additional cases at the meeting of the Southern Dental Association in 1898.

Dr. D. D. Smith, at the Union Meeting of the Maryland State Dental Association, Washington City Dental Society, and Virginia State Dental Association, held at Old Point Comfort, Va., last year, described in a paper entitled "Pericemental Abscess" an inflammatory condition of the pericementum upon vital teeth which, in

so far as its distinguishing characteristics are concerned, belongs to the class of inflammatory processes here under consideration. The clinical phenomena attending the evolution of this condition are in general those of other inflammations of the pericemental membrane, but modified somewhat as to their violence. A slight uneasiness about the root of the affected tooth is first felt, followed by increasing tenderness to percussion, slight extrusion of the tooth from its alveolus, increasing pain of a dull throbbing character, localized swelling which does not become diffused over a large area, no tendency to the infiltration of surrounding tissues, no burrowing of pus into adjacent territory, finally localization and pointing of the abscess and evacuation of the inflammatory products upon the gum surface at a point close to the inflammatory focus. The discharged contents differ from the pus of the usual dento-alveolar abscess of pulp infection, both as to quantity and general character, being relatively slight in amount and mucoid or glairy in appearance, sometimes streaked with blood, and not so yellowish as pus due to infection by pyogenic cocci. After evacuation of the abscess cavity the outlet usually heals spontaneously and the disorder remains quiescent for a greater or less period, when a renewal of the outbreak may occur, with a tendency to repetition indefinitely until the tooth is finally lost through general necrosis of its retentive ligament the pericementum.

In the study of the pathology of these cases we are confronted with an obscure condition and one which presents an etiological problem of much complexity.

The purpose of this communication is to bring into orderly relationship certain isolated observations which have been from time to time made, and from such data to deduce some conclusions which, though by no means intended to be final, it is hoped may serve to place the condition in a clearer light for future study.

Certain features clearly differentiate this form of abscess from dento-alveolar abscess caused by infection of the pericementum *via* the pulp-canal. First, it is found upon teeth with vital pulps. Second, its location may be in any portion of the pericementum, while in the usual form the seat of infection is almost invariably the apical region. Third, it is a disease found only in patients who have reached adult life. The ordinary form of dento-alveolar abscess may be found in patients of all ages. Fourth, it is almost invariably

found associated with teeth of hypercalcified structure—*i.e.*, those of flinty hardness and in which the tubular structure of the dentin has undergone that nutritive change which tends to make them translucent. Ordinary dento-alveolar abscess is found in teeth of all grades of structure. Fifth, abscess upon teeth with vital pulps is found in mouths generally free from caries, and is in no degree dependent upon caries as a cause. Ordinary dental-alveolar abscess is usually found in mouths where caries is active, and the abscess is usually dependent upon caries as a predisposing cause.

It will be seen then that we have to deal with a localized necrotic inflammatory process, in which the cause of the inflammation must be sought for in directions other than those which give rise to infective inflammation through the pulp-canal.

The pathological phenomena involved in abscess of the apical region caused by infection *via* the pulp-canal are so clearly made out that no one to-day has any reasonable doubt that the process is exclusively the result of bacterial infection. In fact, when any disease process is said to be the result of infection by micro-organisms we have come to accept the statement as a full and satisfactory explanation of the phenomena manifested, and are apt to overlook the fact that such an explanation is merely the bald statement of the terminal facts in a complicated intermediate chain of cause and effect. Having admitted that an invasion of tissue by certain bacteria may lead to an inflammatory reaction upon the part of that tissue and result in its partial necrosis and suppuration, we may ask by what means do bacteria produce such a result? Is it by their mechanical presence? While certain disease conditions produced by micro-organisms seem to furnish grounds for such a belief, the evidence is not sufficient to warrant the theory that they act generally as mechanical irritants. It has, however, been clearly demonstrated that in their vital evolution these minute organisms elaborate toxic substances which in some instances are of high degree of virulence, that these toxins if present in sufficient amount effect a total functional paralysis of the cellular elements of a tissue and cause its necrosis and subsequent disorganization. It is then largely through the toxic character of their waste products (ptomaines) that they produce their effects upon living tissue.

It is to be borne in mind also that these toxins are not only poisonous to vital tissue, but to the micro-organisms themselves,

for it has been shown that all bacteria perish in an excess of their own waste products. The application of these facts to the etiology of infective apical inflammation of the pericementum is sufficiently obvious.

When we endeavour to explain the etiology of abscess of the pericementum of vital teeth as a result of infection by bacteria, the relation of cause and effect is less obvious because the possibility of access of bacteria or their ptomaines *viâ* the pulp-canal is eliminated as a factor, and the modus of the infection must be sought elsewhere. There being no break in the continuity of the gingival attachment in the cases under consideration, we naturally consider the vascular circulation of the tissue as the most probable means of entrance for the irritant which is the exciter of the inflammation in question. The pathogenic bacteria may exist in the blood stream and, meeting a *locus minoris resistentia* in a tissue, may set up an inflammatory process at that point is a well-established pathological fact, and it is not at all impossible that the immediate cause of pericemental abscess may be accounted for in that way. There is, however, the question of a predisposing cause, which in these cases is of vastly more importance, and which when clearly made out will enable us to cope rationally with a group of dental pathological conditions which have been the *bêtes noires* of dental practice since its genesis as a calling.

Broadly considered, any inflammatory action is a disturbance of the normal processes of nutrition, and this is true of both general and local inflammations, the disturbance being proportioned to the intensity of the irritative action. Where bacteria and their products are the excitants of inflammation, their effective invasion is conditional upon the vital status of the tissue concerned. If the vital resistance of the tissue is sufficiently high it becomes immune, and bacterial invasion is impossible. The vital potential of a tissue is the result of the sum total of its nutritive processes normally performed. Any interference with the normal nutritive process therefore results in a diminution of the vital potential of a tissue, and renders it liable to invasion by bacteria with consequent inflammatory reaction. A disturbance of normal nutrition resulting in lowered vital resistance is therefore a precedent condition to effective bacterial invasion.

The nutritive disturbances which predispose to the particular inflammatory action under consideration are, in the opinion of the

writer, those arising from auto-intoxication, which has two sources of origin—viz., by toxic substances produced by the human organism as side products of its own nutritive processes, and second by the waste products of saprophytic bacteria acting within the digestive tract, particularly the intestinal canal.

It has been already noted as a general biological law that all micro-organisms perish in an excess of their own waste products, and the same law is equally applicable to macro-organisms, including the human being. It has been stated upon good authority that man produces within his body sufficient poison in six hours to kill him if it were not continually eliminated. These toxic substances under circumstances which interfere with their complete elimination are absorbed through the lymph-tracts, and, finding their way into the general circulation, ultimately exert their irritant effect upon all of the tissues of the body, the tissues reacting in various degrees in proportion to their relative powers of resistance and the amount of irritation to which they are severally subjected.

Toxins produced within the digestive tract by the action of saprophytic bacteria are absorbed and added to the sum total of poisonous material in the blood-stream, modifying its toxic effect in proportion to their amount and virulence.

The continual irritation produced as described reacts eventually upon the general nutritive processes of the body, and by establishing a so-called "vicious circle" brings about a permanent alteration of the nutritive processes which, when it has become chronic, we term a diathesis.

The establishment of a diathetic condition in which toxins are habitually produced and retained in the blood-stream and tissues marks the culmination of a graded series of nutritive changes, during which the production of toxins has gradually progressed with consequent increasing irritative effect upon the tissues. The effect of the prolonged irritation brings about permanent structural changes in certain tissues, and reduces their standard of vital resistance to a point where they become extremely liable to necrotic inflammatory attacks from relatively slight sources of additional irritation.

For reasons not altogether clear the articular tissues appear to be particularly vulnerable to the irritative action here noted, and in their category we include the pericemental membrane.

The clinical phenomena manifested by a vital tooth, the pericementum of which is the seat of abscess, are of interest when viewed in the light of the foregoing presentation of the toxemic character of the irritant. It has been already noted that teeth so affected almost invariably show evidences of hypercalcification of the dentin. They are hard, dense teeth, semi-translucent, and usually free from caries. Evidently the functional activity of the odontoblastic layer of pulp-cells has been unduly stimulated throughout a considerable period of time by an irritant which has been of the right degree of intensity to induce a functional activity beyond the normal point, and that activity of function has resulted in the dense calcification of the dentine noted. It is also evident that the functional hyperactivity has been induced through the vascular supply to the odontoblasts as the only conceivable channel through which it could be expressed.

It is reasonable to assume that a corresponding excessive functional activity has been manifested in the histological elements of the pericemental membrane. Indeed, it is not uncommon to find evidences of hypercementosis upon the roots of these densely calcified teeth.

The theory has been advanced that the acute inflammatory outbreaks in the pericementum observed in these cases are caused by the over-calcification of the dentin cutting off its nutrition and causing the tooth as a whole to act as an irritant foreign body, thus giving rise to acute inflammatory reactions of its investing membrane. It must be evident that destruction of the nutritive supply to the dentin by over-calcification cannot, *per se*, cause the tooth to act *en masse* as an irritant foreign body any more than would destruction of the nutritive supply to the dentin by any other means,—pulp extirpation for example.

It seems more rational to attribute the diseased condition of the pericementum to the same causes which induced excessive calcification of the dentin by over-stimulation of the odontoblasts of the pulp—viz., the action of toxic irritants in its vascular supply. It now remains to consider the nature and seat of the inflammation in these cases.

It is a fixed law of pathology that pus from an abscess tends to find its exit upon the surface, and that in so doing it follows the line of least resistance. Whether a pericemental abscess shall find

its exit upon the gum-surface or at the gingival margin is practically determined by its location on the root, which in turn determines the line of least resistance. And again, whether it discharges upon the surface of the gum or at the gingival margin determines the name by which the inflammatory process shall be designated. If it should find exit upon the gum-surface it has been called with entire justification "pericemental abscess," but should exit of the pus occur at the gingival margin then we have a pus-pocket established, which shows no tendency to heal spontaneously and by infection from the bacteria of the oral fluids becomes a chronic suppurating surface, and is, in other words, pyorrhea alveolaris. The writer hopes it will be clearly understood that the etiological explanation of pyorrhea alveolaris here given is intended to be applied only to the special form of the disease here described, and is not offered as a solution of the causation of the whole group of disorders characterized by a flow of pus from the alveoli.

The diathetic factor in this disorder and the anatomical character of the tissue which is the seat of the lesion, taken together, present certain points for consideration which are interesting as furnishing a rational basis of classification of this disease with other allied arthritic disorders. Anatomists tell us that the union of a tooth to its socket is a joint of the order gomphosis, an immovable articulation, nevertheless containing the tissues common to joints in general and in such order and arrangement as are best adapted to the peculiar nature of their function. It has been called an immovable joint, but this is only relatively true, as such slight motion as is possible by virtue of the elasticity of the pericemental membrane is normal to the dento-alveolar articulation and necessary to the proper exercise of the masticating function of the tooth.

Beside the pericemental membrane or ligament of this articulation, Dr. G. V. Black in his classic study of "The Periosteum and Peridental Membrane" describes certain ectodermic glandular structures situated in the pericementum, lobulated in form and filled with lymphoid cells, which he calls lymphatic glands. In the same work he states that these glands are the seat of phagedenic pericementitis. While he describes most minutely the histological structure of these glands and designates them as lymphatics, he offers no suggestion as to their significance other than that implied by his designation. His reasons for the statement that they are

the seat of pyorrhea alveolaris are based upon microscopic observation, a view which recent investigation by the writer tends to confirm.

The presence of these glandular structures in the pericementum is possibly explainable on grounds other than that they function as lymph-glands. Bearing in mind that the dento-alveolar articulation is anatomically a joint, should we not then expect to find represented in it those tissues which are commonly found in joints in general, and among them those tissue elements which enter into the structure of synovial bursæ? It is true that articular bursæ are found only in the structures of movable joints, but the dento-alveolar articulation is not absolutely an immovable joint, and it would seem not at all impossible that the lymphatic glands of Black represent the effort of nature to supply so much of synovial tissue as the limited mobility of the dento-alveolar articulation would functionally warrant.

The recognized biological tendency to work in harmony with a definite plan would give additional force to the idea that the development of synovial tissue in that position is an attempt to co-ordinate the dento-alveolar articulation with the other articulations of the body.

In this connection, with such a view it is interesting to note that Black has found the glandular formations of the pericemental membrane to be more abundant in the omnivora than in the carnivora,—i.e., in that order of tooth doing relatively the larger amount of work,—and that they were more highly developed in that portion of the membrane nearest the gingival attachment in that specialized bundle of fibres which has been termed the *ligamentum dentis*, and therefore at the area of greatest mobility.

The close similarity of histological structure as between lymph-glands and synovial tissue and their common embryonal origin could, under the circumstances noted, readily give rise to a misapprehension regarding the function and significance of the pericemental glands. The exact nature of these glands is a matter of importance in connection with the present study, for should it be determined that they are synovial in character and admittedly the seat of phagedenic pericementitis and therefore of pericemental abscess, the relation of these inflammatory disorders to the arthritic diathesis becomes clear.

That pericemental abscess is a tophic abscess of the dento-alveolar articulation is the view accepted by the writer hereof, and that so-called gouty pyorrhea and pericemental abscess are but the local expressions of a disorder having a common constitutional origin and differing in clinical expression merely by the accident of position is also accepted. Both conditions may be found upon the same tooth, and both are amenable to a constitutional treatment which will successfully eliminate toxins from the blood and improve nutrition. Local treatment is simply palliative, and success can only be hoped for where both local and constitutional measures are conjointly applied.

The close agreement of the pathological phenomena as between gouty arthritis and this form of pericemental abscess is striking, for when minutely studied all of the phenomena attendant upon a gouty arthritis and the condition under consideration are quite parallel, even to the resorption of the articular surfaces of the bones, which finds its analogue in the apical and lateral erosions so often noted upon the roots of teeth the seat of this form of pyorrhea.

The pericemental tophus presents features of pathological and histological interest.

Through the courtesy of Dr. D. D. Smith, the writer was permitted to examine a specimen of the disorder which is a typical case.

The pulp was vital, and there was no evidence of caries on the crown. The tumour was as large as a small cherry. The specimen was sent to Dr. Robert Formad, of the Histological Laboratory of the University of Pennsylvania, for section. After decalcifying and imbedding, the tumour was serially sliced transversely from base to top and through all the roots of the tooth, and the sections mounted and submitted for examination.

The tissue showed the ordinary reactions attendant upon a suppurative inflammation of connective tissue. One important feature was demonstrated which probably differentiates this form of abscess from that of the apical region due to pulp-infection,—viz., that the inflammatory focus is within the structure of the pericementum and not beneath it.

There is no denudation of the cementum, the focus of inflammation being intra-pericemental and not sub-pericemental. While it is not possible to generalize upon a single observation, it is highly

probable that the intra-pericemental location of the tophic abscess of the dento-alveolar articulation is characteristic.

The precedent stimulative irritation of the pericementum is clearly shown by the two nodes of hypercementosis adjacent to the focus of acute inflammatory action.

While I am conscious of having but roughly sketched some of the pathological phenomena which attend the study of these interesting cases, I am also conscious that I have trespassed greatly upon your time and patience. To have treated the subject exhaustively would have been to write a treatise. The most that I could hope to do under present circumstances was to make a few suggestions, and these I offer for your consideration.—*Cosmos*.

WHY COAGULANTS DIFFUSE THROUGH DENTINE.

By E. LAWLEY YORK, D.D.S., F.R.M.S., England.

ABOUT a year ago I had the honour to present a paper on "The Diffusibility of Coagulants in Dentine." The deductions I drew and the experiments I exhibited at the time showed you conclusively that carbolic acid would diffuse through dentine. Hearing that I was continuing this line of investigation, the chairman of your Executive Committee did me the honour to request me to read another paper along the same lines, and from the generous and kindly manner in which you received my former effort, I consented. The following is the result of my experiments extending over the past year.

If you remember, I stated at that time that I found that there was greater rapidity in the diffusion of carbolic acid through the dentine of a tooth that had contained a putrescent pulp (four to eight hours). This occurred not once only, but in every case, and it set me thinking. Why was there greater rapidity of diffusion in such a tooth and less in one that had contained up to the time of treatment a normal pulp? In the latter we had to deal with a tooth that had so far not undergone any pathological changes, either in the contents of the pulp-chamber or the dentinal tubuli, all the albumen that is normally in a tooth being there intact, whereas in the tooth the pulp of which had died, and as a consequence undergone

the process of putrefaction and the consequent formation of an innumerable number of end-products, we had a totally different condition to deal with. In the first condition we might have an infinitesimal quantity of albumen to deal with, as I will show you later, whereas in the latter we have none, as I will now endeavour to demonstrate.

Many mouth-bacteria, as well as the majority of the pyogenic and putrefactive bacteria, have the faculty of dissolving coagulated albumen or albuminous substances, of peptonizing or converting them into soluble substances, just as albumen is converted into soluble peptones by the pepsin of the gastric juice. Micro-organisms nourish themselves only by substances in a state of solution, and if we present them solid substances they must first liquefy these substances before they can make any use of them for their own nourishment.

After the death of a pulp it is invaded by various bacteria, strictly saprogenic as well as pathogenic, the result of which is that the pulp becomes a foul, semifluid mass. This putrefactive decomposition of albuminous matter is effected by a great variety of micro-organisms and gives rise to a great variety of products, some of which are volatile and are characterized by their offensive odours. This putrescence was the result of, first, the splitting up of the albumens into peptones, which according to Flugge may be effected by a number of micro-organisms, then the splitting up of the peptones into a large number of gases, acids, bases, and salts. Among the products of putrefactive fermentation known to chemists are the following: Carbon dioxide, hydrogen, nitrogen, hydro-sulphuric acid, phosphuretted hydrogen, methane, formic acid, acetic acid, butyric acid, valerianic acid, palmitic acid, crotonic acid, etc. A few words on ptomaines may not be out of place. It is a name suggested by the Italian toxicologist, Selmi, and derived from the Greek word *πτωμα*, meaning a cadaver.

A ptomaine may be defined as an organic chemical compound, basic in character, and formed by the action of bacteria on nitrogenous matter. They have also been called animal alkaloids, but this is a misnomer, because, in the first place, some of them have been found in the putrefaction of vegetable matter, and in the second place, the term animal alkaloid is more properly restricted to the leucomaines, those basic substances which result from tissue

metabolism. While some of the ptomaines are highly poisonous, this is not an essential property, and others are entirely inert. Hence the severe and complicated conditions following in some cases a blind abscess, or the opening of a putrescent pulp-canal, where we have exercised the greatest care. Since all putrefaction is due to the action of bacteria, it follows that all ptomaines result from the growth of these organisms. The kind of ptomaine formed will depend upon the individual bacterium engaged in its production, the nature of the material being acted upon, and the conditions under which the putrefaction goes on, such as the temperature, the amount of oxygen present, and the duration of the process. Ptomaines are the transition products in the process of putrefaction. They are temporary forms through which matter passes while it is being transformed by the activity of bacterial life from the organic to the inorganic state. Complex organic substances, such as muscle and brain, are broken up into less complex molecules, and so the process of chemic division goes on until the simple and well-known final products, carbonic acid, ammonia, and water, result.

It is an established fact, and will be borne out by the experiments which I will give you later, that the end-products of albumen decomposition, or putrefaction, are no longer coagulable. I previously stated in this paper that the first step in the process of putrefaction is the transformation of the albumens into peptones. Now these peptones are not coagulable; for example, if you take pepsin and add it to serum albumen and allow it to digest at body temperature, you will find it is converted into peptones, etc., which are not coagulable. This is precisely the same condition that we find produced by the action of peptonizing bacteria upon proteid matter.

Now, how does carbolic acid act upon these substances? Does it coagulate the orificial ends of the dentinal tubuli, and seal in all this poisonous matter? Most emphatically no. The carbolic acid will penetrate as well as anything else you may use.

Let us now take another view of this much mooted question and see how the carbolic acid will act in the dentine of a tooth in which you have removed a normal pulp, one in which the albumen has not undergone decomposition. I stated earlier in my paper that carbolic acid diffused through the dentine of a tooth from which I

had removed a normal pulp a trifle slower than one which contained a putrescent pulp. The reason for that was this : that carbolic acid did coagulate the trace of albumen that was there, but the former (carbolic acid) being in excess, the coagulum was re-dissolved. I will now show you capillary tubes filled with serum albumen (human), native albumen, and artificial serum albumen, and you will notice the coagulation proceeds slowly, and, following behind a trifle slower, you will see that the coagulum is being re-dissolved. This is precisely the thing that occurs in the dentinal tubuli, only we have such a minute quantity of albumen in the tooth-structure that it is hardly a factor.

To demonstrate the latter statement to your satisfaction I will give in detail some experiments made to determine the quantity of albumen in a tooth.

Determination of Albumen in Teeth. — The teeth are first thoroughly scraped, removing as much of the adhering particles as possible. They are then carefully brushed with alcohol, which coagulates the albumen on exterior of the teeth. After the teeth are dry they are finely pulverized.

To this pulverized substance (about ten grammes) is added a decinormal sodium chloride solution (about twenty-five cubic centimetres) alkalinized with sodium carbonate. This is thoroughly agitated and allowed to stand for thirty-six hours. During this time the mixture is frequently shaken. It is then filtered until a clear filtrate is obtained, and washed. The filtrate is acidified with dilute acetic acid and brought to the boiling point. This coagulates the albumen. It is allowed to stand for some hours until the coagulum settles and the particles become agglutinated. It is then filtered upon a counterpoise filter. The precipitate is then washed until no reaction occurs upon the addition of a solution of silver nitrate.

The contents of the filter are then dried at a temperature of 110° C. for about thirty minutes, then placed in a desiccator and afterwards weighed. The albumen is repeatedly dried until a constant weight is obtained.

The tooth-substance, after being treated as above, was again subjected to the same process, but yielded only a faint trace of albumen, showing that practically all the albumen had been removed.

7.5 grammes (115.74 grains) yield .0028 gramme ($\frac{7}{180}$ grain), $\frac{37}{1000}$ of one per cent.

9.5 grammes (146.60 grains) yield .0067 gramme ($\frac{67}{640}$ grain), $\frac{7}{100}$ of one per cent.

11.5 grammes (177.46 grains) yield .0060 gramme ($\frac{3}{32}$ grain), $\frac{5}{100}$ of one per cent.

(1.) These analyses of the teeth will clearly show you that the amount of albumen in a tooth is of two minute a quantity to be a factor. This applies to a tooth the pulp of which was in a normal condition when analysed. (2.) A tooth the pulp of which has undergone the process of putrefaction of albumen decomposition. The end-products are no longer coagulable. (3.) Had we as large an amount of albumen in a normal tooth as we have always been led to believe, the quantity of carbolic acid which would be accommodated in the pulp chamber and canals would be quite sufficient to redissolve any coagulum that would be formed.

Recapitulation.—I have shown you capillary tubes containing egg or native albumen, serum albumen (human), and artificial albumen, all of which coagulate in the presence of carbolic acid, and you will also observe re-dissolve in an excess of carbolic acid. None of these have undergone decomposition. I have also shown you capillary tubes filled with decomposed serum albumen (human), and gelatin and serum albumen (human), acted upon by various pathogenic and mouth bacteria, none of which show any sign of coagulating in the presence of carbolic acid.

After getting these uniform results by repeated experiments hundred of times, and drawing my own deductions from them, I was naturally anxious to communicate with others who might have been over similar ground in search of other subjects. So I accordingly opened up a correspondence with Professor Vaughn, of Ann Arbor, on the decomposition of albuminous substances, and will give you his reply: "There can be no doubt that the end-products of albumen decomposition are no longer coagulable."

Professor Klebs, of world-wide reputation, also states that they are no longer coagulable, as also does Professor Hektoen, of the bacteriological and pathological laboratories of the Rush Medical College.

Before closing, I have to thank those gentlemen for their courtesy in answering my questions, and also to express my indebtedness to

Mr. O. T. Roberg, of the chemical laboratory of the Rush Medical College, for his valuable assistance in making the quantitative analyses of tooth-substances.

The books I have consulted and freely quoted from are "Ptomaines, Toxins and Antitoxins," by Vaughn and Novy ; "Micro-organisms of the Human Mouth," Miller ; McFarland's "Bacteriology ;" and Sternberg's "Bacteriology."—*The Dental Review*.

A NEW COMBINATION FOR FILLING ROOT-CANALS.

By Dr. W. L. ROBERTS.

SALOL, in any quantity, is to be placed in an iron pot, and double quantity in bulk of balsamo-deldesarto is added, and the two slowly melted over a flame, and mixed ; then, while warm, turn the mass out upon a slab or plate and knead in resin with a stiff spatula, until when cool it forms a crystalline mass that will break with a snap. You will find it quite a knack to get just the right consistency so it will not be sticky and hard to work, but when once prepared a small jarful will last a long time.

The method employed for its introduction into root-canals I will briefly state. Rubber dam applied and canals properly prepared. You will observe that I have here an ordinary Evans canal dryer. I remove the point which comes with it and substitute therefor a copper point. These points I file down from wire, making them of several sizes, so that I may be able to go into any sized canal. I have them no larger than a hair. I prefer copper, because it is easy to work, very pliable and fairly tough. It will safely enter crooks and turns of almost any canal and not break. It is also a good conductor of heat. A small quantity of the preparation is now removed from the jar, rolled with the fingers into a cone, and with the pliers carried to mouth of root-canal. The copper point being heated, the preparation is very easily pumped up or down, as the case may be, into any canal that the smallest copper point may enter. Occasionally some buccal canals in molars are so minute that the smallest point will not enter. In these cases I heat them as warm as possible with hot blast and then force the preparation up with a very strong blast from a foot bellows or condensed air appliance.

In some cases where we have a large canal it is well to introduce a gutta-percha canal point into the preparation while yet soft,

although this is not necessary. In a very few moments the preparation will crystallize, especially if a cold blast is thrown upon it, and any filling material may safely be inserted over it, although where a gold plug is to be inserted I think it well, and in fact recommend a layer of cement over the canal filling.—*Items.*

A METHOD OF VULCANIZING.

IN polishing vulcanite Dr. Hinman usually begins with very fine sand-paper, following this with pumice-stone and prepared chalk, applied with brush wheels, felt-cones and felt-wheels. He does very little file work. After waxing and carving, he applies chloroform to the wax with a small wad of cotton, making a very smooth surface. When this has dried it is followed with a coating of sandarac varnish. This is done either in the case of plain or gum-section teeth. When the case is invested this varnished surface makes a very hard and smooth appearance. When the wax has been washed out, silex diluted with about two-thirds the quantity of water is applied, and almost immediately rinsed out with water.—*Amer. Dental Weekly.*

VULCANIZING ON SILVER.

By D. WEST.

THE use of silver as a base-plate material is very limited, especially as a base with rubber attachments. The principal objection to its employment is generally imputed to the fact that it tarnishes in the mouth. But I think we can reasonably infer that in those cases where rubber attachments are to be made, the real and only objection lies in the difficulty of vulcanizing rubber in contact with silver. There are two ways of accomplishing this in common practice. The first is by thinning the silver base where the rubber is to be attached. This necessitates the sending of the silver to the tinsmith to be tinned. The second method is by introducing tin-foil between the silver base and the rubber. The rubber will vulcanize on the tin-foil perfectly, but I have never been able to discover either a chemical or a mechanical union between the rubber and the silver, although it is claimed that there is such a union. The explanation of this phenomenon is that silver has an intense affinity for sulphur, and also for all the known vulcanizing agents, such as chlorin, iodine, bromine, etc.; so that instead of the sulphur forming

a chemical combination with the rubber it combines with the silver, forming a metallic sulphide. To overcome this we must interpose some non-affinitive substance between the silver and the rubber before we can vulcanize the latter, or if we do interpose an affinitive substance between the rubber and the silver, its affinity must be confined to the silver alone. According to the latter theory, it seemed to me that we should not be limited to the employment of tin or tin-foil for this purpose, and so I tried gold-foil. This proved successful, but there appeared to be no definite union. The next trial was with a silver plate coated with mercury. The rubber vulcanized upon this thoroughly, but on separating it from the silver the amalgamated surface of the silver appeared to be somewhat oxidized, though not to an objectionable extent. The third experiment was on a silver plate coated with mercury and covered with gold-foil, to absorb some of the mercury. The results were entirely satisfactory, and the materials are such as are available in every dental office. I think it quite possible that other affinitive agents, such as metallic chlorides, could be employed for the same purpose, but have not tried them.—*Cosmos*.

GOLD.

By Mr. W. E. GRANT.

GOLD can best be annealed by placing on a tray of mica or platinum and holding over a flame or by the use of an electric annealing tray. The greatest cohesive property is obtained a little short of redness. The working properties of the various reliable foils makes but little difference to the cautious operator. Of course their manipulation depends somewhat on their manufacture. The crystal golds absorb more impurities and require special care in keeping and annealing. In the use of this form of gold, the tendency is to use pieces that are too large, because, being spongy in character, the gold appears to become more thoroughly condensed in manipulation than is really the case. The mistake is also made in increasing the size of the pieces of gold after the extension of the filling beyond the cavity walls and also in increasing the size of the instrument to be used. The tooth, by its physiological construction, is only able to receive a certain blow without injury, hence the condensation of the material is decreased as the size of the instrument is increased.—*Items*.

THE DENTAL RECORD.

VOL. XVIII. DECEMBER 1ST, 1898.

No. 12.

Original Communications.

DENTAL ETHICS.*

By W. H. WAITE, L.D.S.I., D.D.S.Phil.

WHEN our good Secretary asked me to say a few words this evening on Dental Ethics, I felt some hesitation and diffidence because the subject is a wide one. According to the Imperial Dictionary, "Ethics" signifies "The science of teaching men their duty, and the reason of it." It would appear that Dental Ethics must comprise the duty of the dentist, and having been associated with dentistry, directly and indirectly, for over forty years, it seemed as if it ought to be possible to offer the fruit of experience so as to be helpful to some of the younger members of our Society. If anything should sound dogmatic or presumptuous, let me beg you to remember the subject was chosen for me, not by me.

The duty of the dentist naturally divides itself into two sections, viz., his duty to the patient and his duty to professional brethren. Under these two heads let me presume to offer one or two commonplace observations:—1. The duty of the dentist toward the patient. If the relation between the two is to be permanent and satisfactory, it must be governed by certain definite principles, some of which are fundamental and invariable. First among these stands the determination to do the best he knows in every case. This is the prime consideration, the fixed purpose, unmoved and untouched by any condition or circumstance whatsoever. The patient has a right to expect the best service the dentist can render, he has come in the confidence he will get the best, and it would be dishonest to betray that confidence. The amount of the fee is not the first question, though sometimes that may influence the choice of material. Far above any pecuniary advantage to be derived, the

* A Paper read before the Liverpool District Odontological Society.

dentist will value the integrity of his professional character, in jealous defence of which he is bound to do the best he knows every time. If you think of it, here is the only solid foundation of lasting allegiance. Let the patient once mature the conviction that the dentist does his very best, "all the king's horses, and all the king's men" will fail to shake his confidence, whereas should the suspicion once cross his mind that he is carelessly treated or neglected, it will be impossible to maintain the relation. As a matter affecting his own reputation, no less than a duty he owes to his professional status, the dentist must devote the best of his ability to every case entrusted to his care.

Next in order, it may be properly contended that the dentist should be resolved to have his own way. This may sound a little arbitrary, but in reality it is only the complement of what has already been said. The dentist not only knows better than the patient; he knows all, while the patient knows nothing. To allow the patient to prescribe the *modus operandi* would be fatal, and there is often more danger in a conflict of opinion between dentist and patient than at first sight appears. Timid, nervous and self-willed patients often endeavour to interfere with the course of treatment, and sometimes they do so with much plausibility and persuasiveness, and when the dentist is young, and the patient is a lady, it may require all his resolution to withstand her blandishments. If, however, he is dead-set on doing the best he knows, he must be equally firm in having his own way; and if this be impossible, he should have the courage to decline the case. No satisfaction whatever is to be secured by yielding to the uninformed and generally foolish ideas of the patient, and it is better to maintain professional authority, even with the loss of a case, than to forfeit all claim to professional authority by doing less than the best he knows. In this connection it is right to include the necessity for preserving dignity, as against the dictation of the patient's medical adviser. There are many medical men now-a-days who willingly recognise the professional status of the dentist, and who cheerfully accord to him proper deference in his own sphere. There are others, however, who have not yet discovered how to behave toward a dentist, and who presume to send their patients *with instructions* as to what should be done. These gentlemen require enlightenment, and it is the duty of the dentist to

enlighten them. If the ideas suggested by the patients are mistaken, it must be admitted that some of the instructions sent by medical men are highly amusing. Moreover, if in a moment of weakness, or with the imaginary notion of pleasing the doctor, the dentist allows himself to be diverted from the treatment his own judgment dictates, it almost invariably happens he finds reason to repent his folly.

Another feature of this relation arises naturally out of the foregoing. The dentist should educate his patient. The patient is ignorant. So long as he remains ignorant he cannot appreciate the efforts made in his behalf. Only the other day, a young lady belonging to a respectable family in our neighbourhood told my wife she always went to a man who is neither qualified nor registered, because "he gives me no pain." Imagine the crass ignorance veiled in that remark. There are many ways in which patients may be instructed as to the order of the first dentition, and the advantage of taking care of the deciduous teeth. How many thousands of six-year-old molars are destroyed through the ignorance of parents who believe these to be temporary, and therefore of no value? Then how few people understand the order of the second dentition, or the importance of watchful and skilled attention during the process, so that irregularities may be prevented or corrected in time. Further, patients need continual exhortation in respect of periodical examination, to discover incipient decay, and arrest its ravages by timely interference. Beyond this, again, lies a most interesting and fruitful subject in the anatomy and distribution of the fifth pair of nerves, easily explained by means of a good diagram. A little instruction here would enable patients to comprehend how any irritation of a tooth pulp may cause pain over the side of the face, pain which, as we all know, is often maltreated under the name of neuralgia. A little education on these and similar topics would save a world of trouble and misunderstanding, both to dentist and patient, and it seems to me the conscientious dentist will use every endeavour to give such instruction.

We are sufficiently aware of the demands made on ourselves by lengthy and tedious operations, but do we remember the strain inflicted on the patient, a strain which might be relieved to some extent if the patient had an intelligent conception of the work in hand? The necessity of frequent visits during the treatment of

diseased roots, for example, must be a mystery to the untutored mind, and although the visits may be paid in blind obedience, it were surely far better to obtain hearty acquiescence in what is going on. Here again, self-interest is involved.

Whether patients take in our explanations or not, it is certain they gain confidence when they realise the dentist not only understands his work, but is anxious they should understand it also. Furthermore, we have here a powerful weapon against the pretences of the charlatan. He trades on public ignorance, and in proportion as people see the object and value of good dental work the occupation of the empiric is diminished. A simple explanation of what is necessary or desirable would often dispel fear, and ensure thorough co-operation.

The last point to be noted under this head is the question of fees. As before stated, this is not the first consideration ; the dentist whose sole aim is to make money, will not succeed either in doing the best he knows, or in having his own way as to methods. He cannot realise high ideals of professional character, because he has tied himself down to a low standard. It seems impossible to fix any rule as to dental fees, and there is no need to do so. All such attempts are open to objection, and become unworkable under given conditions. Not only does the standard of value vary according to the character of the work, but also according to the resources of the patient. For the young practitioner, the question of fees is beset with difficulties. His time is not sufficiently occupied to make it very valuable, and he does not fully estimate the prospective results of his work. As a rule, he is more likely to win success by moderate fees than by attempting to rival his more advanced brethren. Here is an idea which may furnish a peg for discussion, viz., fees for consultation. There are persons who go about touting, chiefly as to the cost of artificial work ; suppose that a fee, say half-a-guinea, was required before giving any estimate, such a charge would let the public know we value our time and opinions as well as our work. We cannot prevent competition, but we might reduce it, and discountenance the tricks by which it is encouraged ; what we want is, to create a general belief, a public sentiment, that the dentist knows his work, that he may be trusted to do his best, and to demand no more than a just and equitable remuneration.

So much for the first part of the subject.

2. Turning now to the second part, the duty of dentists towards each other, we recognise little but progress all along the line. Few things in life afford a deeper satisfaction than a retrospect marked by growth and development, especially when advance is in the direction of liberty, generosity, and mutual esteem. During the past thirty or forty years a revolution has occurred in the relation of dentists towards each other. Instead of isolation we have free fraternal intercourse; instead of jealousy, we have generous respect for each other's ability. It is difficult for the young practitioner to-day to imagine the marvellous transformation that has taken place. So completely are the conditions altered, there is in truth little to be desired, save, perhaps, that practitioners should be more diligent in using the facilities within their reach.

It was very gratifying at the last meeting to hear one of the members relate how he had sent a difficult case of regulation to another dentist for his opinion. This is not exactly a new departure, but it is an example which might be often followed with advantage to all concerned. Perhaps it would be better still, than sending the patient alone, if an appointment could be made for mutual examination and consultation. There are several unwritten laws which govern the relation of dentists toward each other, among these it may be noted that it is bad form to criticise another's work in the presence of a patient. The temptation often arises, and sometimes is very strong; but the rule should be inviolate, and patients would soon learn to respect it. As to repairing another's work in either department, it used to be the custom, in certain quarters, to refuse to touch another man's work under any circumstances, a custom which can only be described as arbitrary and unprofessional. Now it is generally admitted that any attempt to benefit ourselves, at the expense of another's reputation, is unworthy and discreditable in a professional sense. There is one exception, viz., the quack. We do not know this man; he seeks to obtain patronage by misrepresentation and fraudulent announcements; we can enter into no sort of relation with him. Should any of his work be laid before us, we show wisdom in declining to interfere with it. I think we might venture to say, whenever another's work is brought to us, we have a right to ask who the other man is? If he is unknown, we can by the aid of the Dentists' Register,

supplemented by the list of Members of the B.D.A., find information as to his status, should we desire to do so.

In the year 1771 John Hunter made the first attempt to put dentistry on a physiological and pathological basis. His effort was crude and imperfect, but he went about it in the right way, by analysis and experiment. Since that time what prodigious advance has been made in scientific discovery, in artistic and manipulative skill, and in the quality of materials and appliances needed in the art! Not only so; during the last half century chaos has given place to order; what was a mere handicraft has become a recognised profession, with a well-defined educational and political status. As we think of all this, feelings of true gratitude well up in our hearts, towards those whose earnest thought and laborious effort achieved such splendid results. More, we cannot escape a deep sense of responsibility as to the work of the future. That responsibility rests essentially on the young men, and the work of the future will be to establish the Ethical status of dentistry in the confidence of the people. It is a worthy task, and one which I would commend to your earnest consideration; if we may but strike the right note as to the true object of life; if we may remember that as we brought nothing into this world, so we can take nothing out; if we may perceive, that we have no right to take unless we are prepared to give—if we can see that we ought to be ambitious to give more than we take—if we will grasp these as fundamentals, our daily work will be uplifted, ennobled, purified; there will then be few discords in the music of our relations, on either hand. The daily work of the dentist is toilsome enough—aye, even monotonous—but it has its compensations, neither few nor small. He knows he can form a correct diagnosis nine times out of ten, he understands he can give relief to suffering almost every time, and he has the satisfaction of being able to restore to comfort and utility the organs he professes to treat.

These are gratifying features not found in every calling; they give occasion to stimulus and encouragement—they remind us that having a sphere full of interest, and abounding in grand opportunities of useful and lasting service, we are pledged by every consideration of duty and interest to be faithful to our patients and fraternal towards each other.

METHODS OF DEALING WITH THE DENTAL PULP IN DIFFICULT AND INACCESSIBLE ROOTS.

By F. C. PORTER, L.R.C.P., M.R.C.S., L.D.S., D.D.S.

ASSUMING the tooth is about to be filled permanently, what is the best method of sealing or filling those roots which defy our attempts to penetrate any great length into the canal?

To read some authors on the subject of root-filling, their particular method would seem to solve the problem of filling any and every root to the very apex with mathematical certainty. It is true, some roots one is practically sure of filling to the apex, and in such cases it matters little what method we adopt so long as the operation is performed with proper precautions as to asepsis and cleanliness.

Some few years back, the results of a series of experiments by Professor Miller were published in the *Cosmos* on the ability of certain drugs to render the part of the dental pulp left in its canal (the portion occupying the main pulp chamber having been removed) thoroughly and permanently antiseptic, converting it, as it were, from a possible source of danger into a reliable filling for its own root. Now, while in those roots from which the pulp can be extracted, and the root filled, this method should never be thought of, we not unfrequently come across roots from which, even after much labour, we are by no means certain the whole or even any portion of the pulp has been extracted.

At this point I should like to mention I owe a debt of gratitude to Mr. Edward Preedy for a method that has enabled me to remove many pulps, where I should have otherwise failed. To get the most out of a canal-cleanser or nerve-extractor, it is necessary the instrument should be rotated in the canal. In distal cavities, with the bristle bent at right angles, to do this is risky, for fear of breakage, and sometimes it is actually impossible.

Mr. Preedy overcomes the difficulty by cutting the unhandled Donaldson bristles to various lengths, and improvises a handle by melting a small knob of sealing-wax on to the shank end.

But assuming we are unable to remove the pulp from the canals, what is to be done? In dealing with such cases it is well to bear in mind the following points:—

Firstly, that owing to the treatment not being as thorough as could be desired, pericementitic troubles are the more likely to occur

subsequently, and therefore the filling in the canals and pulp cavity should for choice be of such a nature that it is easily removed if necessary.

Secondly (and this I look upon as an important point), the tooth in question having been attacked by caries at least on one side, a cavity penetrating to the pulp chamber may occur on another, so exposing its contents to the fluids of the mouth and any matter that may happen to lodge there. The material in the pulp cavity, should therefore, be preferably of such a nature that it would not under such circumstances be washed away or decomposed.

Thirdly, in those cases where we have reason to fear some pulp tissue remains in the canal, the material should be of such a nature that it can be absorbed by the pulp tissue.

Fourthly, the filling should if possible be non-irritating.

To find any one substance that in itself fulfils all the above conditions would immensely simplify matters, but up to the present I have not found any such, so have resource to the following method of procedure.

The pulp chamber having been thoroughly cleansed and dried, I take a pledget of rock asbestos, which can be teased into shreds like cotton wool, but which will not undergo decomposition if exposed to the fermentations occurring in the mouth. It can, too, be rendered aseptic, if the operator so wills, by passing it through the flame of a spirit lamp. This pledget of asbestos I saturate with oil of cinnamon. And here, if you will pardon a digression, I should like to mention two cases in which I forced the oil of cinnamon through the apical foramen. They were both lower molars, from which I felt by no means certain the whole of the pulp tissue had been removed. I filled the roots with asbestos saturated with oil of cinnamon, and in my endeavours to get the filling to the bottom of the canal used too much energy, the result being some of the oil found its way through to the surrounding pericementum. For several days acute pain was the result. But gradually it subsided, and both cases are at the present day quite comfortable, and it is more than three years ago the teeth were filled.

The asbestos, saturated with oil of cinnamon, I coat with powdered chinosol or aristol, and convey to the mouth of the canal, or if possible, insert into the canal itself. These being in place, I fill the pulp chamber with gutta-percha.

In those cases in which I have failed to reach or to remove any of the pulp from the canal I use a paste consisting of—

Dried Alum,	} \overline{aa} 3 i.
Thymol,	
Glycerine,	

Zinc Oxide, q.s. to make a stiff paste.

This I moisten with oil of cinnamon, and place over the mouth of the pulp canal. The formula for this paste is taken from an article by Dr. Lödesberg in the 1895 *Cosmos*.

I shall perhaps make myself clearer if I give the outlines of some cases treated in the method I have just described.

Case I.—A second left upper molar, having a distal cervical cavity containing an amalgam filling. Decay had recurred at the gum margin until the pulp was exposed. The crown surface was intact. As_2O_3 was applied. Subsequently the main body of the pulp was extracted, and also the portion in the palatine root, which was filled with a gutta-percha point. A small pledget of the paste smeared with oil of cinnamon was placed over the mouth of the two buccal roots, and pulp chamber filled with gutta-percha.—April, 1898.

Case II.—Buccal cavity in right lower third molar. The pulp being devitalised, the portion in the posterior root was extracted, but I failed to remove any from the anterior root. The posterior was filled with a guttapercha point, and asbestos saturated with oil of cinnamon and aristol forced as far into the anterior root as possible.—February, 1897.

Case III.—A mesial cavity in second upper left molar. The pulp was devitalised as far as possible by As_2O_3 , but the patient was extremely nervous and jumped at every little touch of pain. The pulp, however, was removed from the main chamber, which was filled with aristol and oil of cinnamon with gutta-percha to cover it.—January, 1895.

Case IV.—Second upper right molar, distal cavity. The patient had a small mouth, which he had great difficulty in keeping open any length of time, added to which he secreted enormous quantities of saliva. There had been considerable chronic pulpitis, and I had great difficulty in getting the arsenic to act. Finally, having removed pieces of the pulp, I filled the palatine root with oil of cinnamon and asbestos, putting paste moistened with oil of cinnamon

over the mouths of the buccal roots. The pulp chamber I filled as usual with gutta-percha.—August, 1896.

All the above cases up to the present have given no trouble.

Of late the use of formaldehyde has come much to the front, and certainly the way it hardens the tissue would lead one to hope that it might prove useful as a mummifying agent in roots which, still perforce, retain the dead pulp. I have had no personal experience of it. To some this method of attempting to mummify the pulp may seem slipshod and wanting in thoroughness, but, used with discrimination, I have found it extremely useful.

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE first monthly meeting of the new Session took place on the 7th ultimo, at 40, Leicester Square. Mr. J. FAIRBANK (President), occupied the chair.

The Minutes having been read and confirmed the President delivered his Introductory Address.

The PRESIDENT said in the first place he had a very pleasing duty to perform, it was to thank the members of the Council and the Society for the honour they had conferred upon him. Sensible as he was of his own shortcomings, it would be his endeavour to maintain the prestige of the Society which had included so many of the eminent men in the profession. Having referred to the importance of the L.D.S. diploma, he dwelt at some length on the specially mechanical nature of their profession. The majority of their operations necessitated a very considerable degree of mechanical skill which could only be acquired by special teaching and practice. He did not wish to underrate the advantages of surgical training, but mechanical skill helped the dentist to appreciate the delicacy and sensitiveness of the structures he had to deal with. With regard to dental training, he thought 17 was a suitable age for a boy to leave school and commence his three years' apprenticeship. Two years of that apprenticeship should be passed in working eight hours a day at the bench, while the evening might be devoted to the study of chemistry, metallurgy and elementary biology. The greatest possible amount of supervision should be given to the student whilst acquiring the art of treating and filling teeth. He

held that teaching a class by demonstration on a patient was not sufficient or satisfactory unless the class was an advanced one, but that a student should be carefully overlooked and helped in each operation that he was performing. He was convinced that it was possible for a dental student to pass through the whole of his curriculum, and unless he had been carefully supervised in his work, to be incapable at the end of his time of thoroughly performing the operation required in the treatment of root canals. The greatest portion of the student's time should be devoted to gold filling.

Speaking of the circumstances that influenced the character of the profession in England, he instanced first that of competition arising from numbers and from the influx of more accomplished dental surgeons. Over the former there was little or no control; but over the latter a very considerable influence was wielded by those engaged in the training of the dental student by the Board of Examiners, and by those upon whom fell the responsibility of appointing fresh men when vacancies occurred in the staff of teachers and examiners. There were also the temperaments of the patients to be considered. He believed the average Englishman was more sensitive than the foreigner, more imaginative, and much more inclined to faint. He thought that firmness of purpose, combined with patience and gentleness, would be found to result generally in the patient bracing himself up to bear the tedious process he had often to undergo. There were two points that he had noticed frequently in operating on very sensitive teeth. One was, that on removing the carious dentine from an actually sensitive mouth, after a few cuts with the excavator the sensitiveness almost wholly disappears; and the other was, that patients who were most impatient during the preparation of the cavity gave no cause for complaint during the most prolonged operation of inserting the filling. There were two other influences more or less important affecting work in the mouth. There was the question of light, and in that respect the profession in England was considerably handicapped. The other influence was the question of fees. Patients were not equally rich, and might not be able to afford to pay for expensive gold fillings. In that case they must be satisfied with the more modest amalgam; but although the purse might control the material of the filling, it should have no effect on the

quality and conscientiousness of the work. He thought no opportunity should be lost of talking to parents plainly about the necessity of the most perfect operations being performed on their children's teeth, and how the matter should be considered and provided for in the same way that the children's education was dealt with. On the subject of the material and instruments used by dental surgeons, he thought the quality and temper of the steel with which the instruments were made, and the colour and texture of artificial teeth, left much to be desired. He thought that artificial teeth might be made to look more real and less like porcelain, and tinted in such a way as to defy detection. Young men in the profession should take the question up and interest themselves in the matter, and their labours and researches would be highly appreciated by the dental profession. In conclusion, he spoke of the necessity of being armed at all points against the common enemy—caries—an enemy in the subduing of which nature did little or nothing to assist the surgeon.

The following gentlemen were proposed as non-resident members :—Mr. Albert De Mierre, L.D.S.Eng. (Eastbourne) ; Mr. H. R. Fryer Brooks, M.R.C.S., L.D.S.Eng. (Banbury) ; Mr. Guy Chatterton, L.D.S.Eng. (South Africa).

The LIBRARIAN (Mr. H. Baldwin), announced the usual exchanges.

The CURATOR (Mr. Storer Bennett), remarking that he did not recollect an occasion on which they met for the first time in the autumn session when he had only one specimen to acknowledge, stated that Mr. Wells, of Plymouth, had presented a specimen of a gemmated central lateral temporary incisor from the upper jaw to the Society.

Mr. C. E. SMITH, through Mr. Shillcock, read a short description of his method of using tube teeth applied to bridge work and on its advantages. First fit the tube teeth as for plate work, and then cut away the back of the lower half of the teeth. After all the teeth are so prepared, fit a piece of fine gold or platina to cover the entire back of the cut teeth, and drill holes in correct position for the pins of teeth. Place the pins in situ. It is advantageous to solder these and the backings together at the same time. When all the teeth are backed, replace the teeth with their backings on the model in conjunction with their crowns, and fix the backing plates and crowns

together, care being taken that the wax does not run on the teeth. Remove the teeth and invest the crowns and backings for soldering in the usual way. The first advantage of this method is that if broken the teeth might be replaced without removing the bridge ; secondly, the great saving of gold ; thirdly, the closer resemblance to natural teeth ; fourthly, as the teeth are not put through the fire there is no risk of cracking.

The PRESIDENT remarked that the method seemed to present certain advantages for bridges in which flat teeth were generally used.

Mr. STORER BENNETT read a paper on "Ankylosis of Human Teeth to the Jaws," illustrating the cases to which he referred by a series of lantern slides thrown on a screen. He said the attachment of teeth to the jaws by means of bony ankylosis, though common among fishes and reptiles, had hitherto been pronounced by the best observers either as impossible, or, at any rate, as never taking place. Some two years ago a specimen, resembling a cherry-stone in shape, but bony in appearance, was sent to him by Mr. Whatford, which had been removed with great difficulty, after an operation under ether of nearly an hour, from the mouth of a lady who had suffered with profuse discharge from the gum in the region of a lower molar. Though seeming to consist of bone, at one point a tiny piece of root seemed visible, and Mr. Storer Bennett removed a section from this portion for the microscope, finding to his surprise that he had a longitudinal section through a root closely embraced by bone, with which it was at some parts so intimately blended that it was impossible to see where one tissue ended and the other began. His second specimen he received from Mr. Hopewell Smith, a case that had been under the care of Mr. E. Lloyd Williams some years previously. The patient, a man, also suffered from suppuration, for which an upper bicuspid and molar were removed, with large masses of bone attached to them. Both teeth showed with equal beauty and equal certainty that the teeth and bone were ankylosed together. His third instance was supplied by M. Choquet, who had sent him some lantern slides, but he had not had the opportunity of examining the original specimen, though he believed Mr. Hopewell Smith had done so. The fourth case was presented to Mr. Bennett by a student recently, and proved as fine a specimen of ankylosis of a lower molar to the bone as any he had hitherto met with. In

this, as in the last case, the bone was of the loose cancellated character, commonly met with in what had been described in fishes as "bone of attachment," but which was of course normal in them, though pathological in human beings. Lastly, he had examined an old specimen which had been in his possession for some years, and which presented appearances he had hitherto attributed to other causes. He was now forced to the conclusion, viewing it by the side of the other sections, that it also was a case of true ankylosis. He thought that the subject had important bearings on the operations of replantation and transplantation, more particularly on the latter, for where teeth were used which had long been strangers to the mouth, the only chance on which success could be expected was in ankylosis being established. Mr. Storer Bennett concluded by dealing with the question why the condition of ankylosis had been so constantly denied.

The PRESIDENT said Mr. Bennett's paper was a very interesting one. Ankylosis of the teeth to the jaw was certainly an unusual occurrence; indeed, he was not aware until that evening that it existed in human teeth.

Mr. DOUGLAS CAUSH had listened with very great pleasure to Mr. Bennett's paper—and had also examined the slides—because during the past 15 years he had been dealing with exostosed teeth; but he should like to ask Mr. Bennett if in any of the specimens he had attempted differentiation of the tissues by surface staining after the sections had been cut? When first commencing work with exostosis, he thought he had found out an ankylosed tooth, but on carefully surface staining the section, and placing it under the microscope, he found there was a very thin line of demarcation between the old and new tissue. Up to the present time he had not been fortunate in getting a true case of ankylosis. In the first case placed upon the screen there was a sort of membrane on either side of the fracture with roughened edges.

Mr. HOPEWELL SMITH said Mr. Bennett had been good enough to throw on the screen a decalcified section from a case that came under his (Mr. Hopewell Smith's) charge at the hospital nine years ago. Mr. E. Lloyd-Williams was the surgeon for the day, and he consulted him about the case, with the result that they got several most interesting pathological specimens. He had in his hand, through the courtesy of Mr. Gabell, a model of the mouth (taken

from the museum) as it was at the present time, with a portion of one of the teeth removed on that occasion. With respect to M. Choquet's slides, there was undoubtedly no trace of the periodontal membrane existing between the cementum and the alveolus.

Mr. PARFITT felt that hardly anyone could doubt that in some of the specimens the bone and teeth were continuous, but he should like to ask what evidence Mr. Bennett had that the masses of bone were continuous with the jaw. They seemed uncommonly like stalyctitic masses. In none of them was he able to see any definite union with what might be called the normal alveolar process. Another question was, what was the teeth of the shark ankylosed to? He had always understood that the teeth of the shark were attached to the cartilagenous jaws by a fibrous membrane, and if the bone which was seen attached to the tooth was at all comparable to that on the base of the shark's teeth it could hardly be considered a case of ankylosis.

Mr. F. J. BENNETT thought the very interesting paper they had heard would serve to enlarge their views as to the possibility of ankylosis occurring. Some might think that had the specimens been stained further points would have been brought out; but as far as he was concerned, he should say that in some certainly it was quite impossible to imagine there could be anything but an intimate bony union between the cementum and the teeth. The evidence was incontrovertible, especially when they came to the one in which Howship's lacunæ were seen lying in parts of the specimen where the cementum had been eaten away by the encroaching bone; in that specimen there could be no shadow of doubt as to its being a case of ankylosis. With regard to stalyctitic masses, there was no possible resemblance, either clinically, microscopically, or chemically, between them and masses of bone. Having examined the model belonging to Mr. E. Lloyd-Williams, he had come to the conclusion that it was originally an enlargement of the jaw bone, and that in that case ankylosis had been caused, not temporarily by anything connected with the teeth, but by the enlargement of the tissue of the jaw bone encroaching upon the tooth, and the active cells of the bone eating into the teeth and becoming intimately connected with the tissue. That applied to a certain class of such cases, but he thought there were other ways of explaining it, and that Mr. Bland Sutton's classification furnished a parallel, more particularly in

the instance of the follicular odontome. He believed if the cases were put side by side, and read with Mr. Bland Sutton's account of the way in which the odontome was formed, it would be found that if the one was admitted to exist, the cases of ankylosis might be explained on the same grounds; at any rate, he saw no reason to imagine that they must still cling to the idea, against other appearances that the microscope gave, that there must be a living periosteum between the socket and the teeth.

Mr. W. MAY did not think that an odontome had ever been found ankylosed to the jaw. He could perfectly well imagine, in the specimens Mr. Storer Bennett had shown, a condition of chronic inflammation occurring round the root; the first cementum exostosed, and that becoming more vascular, and even bone growing round, just as in the pulp canal.

Mr. F. J. BENNETT pointed out to Mr. May that the bony shell of the dentigerous cyst was in connection with the bone, and yet the bony shell was, according to Mr. Sutton's explanation, a part of the follicle wall, which on the inside contained a fluid, while the outside portion became calcified, and was intimately blended or united to the rest of the bone of the jaw.

Mr. E. LLOYD-WILLIAMS thought he might answer two of the speakers. One of the cases Mr. Storer Bennett had shown on the screen he had taken great interest in since 1889, and he could assure both speakers that he had now in his possession specimens which would show undoubtedly that the tissue was the result of osteitis. He could also offer to Mr. Caush one or two specimens which Mr. Caush might stain for himself by any method he pleased, and he thought he would be convinced that they were cases of true ankylosis. He had no doubt whatever in his own mind, both from the clinical history and also from the appearance under the microscope, that the case of 1889 was one of ankylosis. What the exact pathological changes might be he was not prepared to say, though he personally was inclined to the view expressed by Mr. Bennett that it was probably due to some osteal change in the inflammation of the bone, rather than any change in the periosteum itself.

Mr. H. BALDWIN wished to ask if the teeth appeared to be dead before the union took place. Judging from the appearance on the screen, they seem to be pulps which had entirely calcified. He

thought that Mr. Storer Bennett's paper raised a most interesting point in dental pathology.

Mr. W. B. PATERSON thought that in all the specimens put on the screen ankylosis was the result of pathological processes.

Mr. STORER BENNETT, in reply, said, in answer to Mr. Caush, that the first specimen placed on the screen was stained by carmine. The decalcified section lent him by Mr. Hopewell Smith was stained with hæmotoxin. Mr. Parfitt had drawn attention to the fact that the teeth of sharks were attached to a mucous membrane, but he would remind Mr. Parfitt that while it was perfectly true of some species, the variety in the species was very numerous, and in the Port Jackson shark he thought Mr. Parfitt would agree there was no such attachment. His only reason for showing the specimen of shark's teeth was to draw attention to the loose cancellated bone described by Mr. Tomes as "bone of attachment," a sort of intermediate bone between the dense bone and the jaw and the tooth itself. The specimen was normal, whereas all the other specimens he had shown were pathological. Perhaps the expression stalactitic was unfortunate, but he had used it merely to draw attention to the naked eye appearances, not for a moment imagining or suggesting that any process similar to the formation of stalactite was going on. Replying to Mr. May, if he bore in mind the appearance of the photographs, he thought he would see that the appearances he described were not borne out, certainly the specimen of Mr. Hopewell Smith bore no such resemblance. With regard to Mr. Baldwin, too, at any rate, of the specimens showed, evidence probably of the pulp being calcified. Objection had been taken to his calling the cases cases of ankylosis, because it was said that there was no evidence of bony connection between the osseous tissue and the jaw, but it should be remembered that profuse suppuration had taken place in all those cases of which he had any history, and he thought they ought to regard the bone as a sort of sequestrum.

Mr. F. J. BENNETT moved and Mr. LEONARD MATHESON seconded a vote of thanks to the President for his Address, which was carried by acclamation.

Votes of thanks having been tendered to Mr. Storer Bennett and other gentlemen for their part in the evening's proceeding, the meeting adjourned.

LIVERPOOL DISTRICT ODONTOLOGICAL SOCIETY.

THE Second Ordinary Meeting of the Session was held in the Medical Institution, Mount Pleasant, on Tuesday, November 22nd, at 7.30 o'clock.

THE PRESIDENT, Mr. J. S. Dickin, was in the chair, and there was a fair attendance of members. The senior students from the Dental Hospital were invited, and attended in good numbers.

THE HON. SEC. read the minutes of the last meeting, which were confirmed.

THE PRESIDENT then called upon members for Casual Communications.

Mr. R. EDWARDS said: The specimen which I am about to hand round illustrates one of the dangers of pivoting. The operation had been performed fully six months previous to my seeing the case. The patient testified that she had suffered constantly more or less, and during the first few weeks immediately following the insertion of the pivot the local trouble was so intense as to produce severe constitutional disturbances, in consequence of which she was confined to her bed for several days. The root and crown (upper central) were still in position, but so loose that I was enabled to remove both without the aid of a forceps. The surrounding gum was inflamed, swollen, and saturated with pus. At a point corresponding to the apex of the root was a large fistulous opening, on probing which I discovered necrosed bone. The opening was enlarged, and a sequestrum consisting of the alveolus surrounding the upper two-thirds of the root was removed. You will have no difficulty in seeing by the pin, which is longer than the root canal, that the apex was drilled through, the burr probably carrying with it some septic matter. The acute inflammation following produced necrosis, and the presence of the sequestrum would prevent the surrounding parts from healing.

Mr. T. MANSELL handed round a model showing the rather unusual condition of a lower central incisor being fractured by a blow at football, while the upper ones were quite untouched.

Mr. DICKIN exhibited the new electric continuous-gum furnace manufactured by the Dental Manufacturing Company.

Mr. L. OSBORN showed a patient, a female aged 22, who, when 15, had a slate thrown by schoolfellow at her, struck her on the right side of face, extending from just below orbit to the chin, caused

deep laceration of fleshy parts, damaged the maxillary bone (right), and fractured mandible at the position of canine, on same side. The maxilla necrosed, and an operation was performed for total removal on the right side, leaving only the floor of orbit, the resultant cavity communicated with the nose, the mandible united again, but in a malposition, teeth from canine backwards all erupted inwards to the tongue, their buccal aspects only being available for mastication. Owing to cicatrization, buccal muscles very tense and drawn in; this, and malposition of lower teeth, presented great difficulty in the matter of artificial denture. He brought her forward for suggestions as to treatment.

At 8 o'clock there was an interval, during which tea, coffee and light refreshments were partaken of, after which the President called upon Dr. Waite for his address, entitled, "Dental Ethics" (see page 537).

A very free discussion took place after this valuable paper, in which Messrs. Rose, Edwards, Pidgeon, Royston, Gilmour, Osborn, Woods, Lloyd and the President took part. One and all thanked Dr. Waite for his contribution, and in the main agreed with him in his ideas as set forth.

DENTAL STUDENTS' SOCIETY, DENTAL HOSPITAL OF LONDON.

AN Ordinary General Meeting was held on Monday, October 10th, at 7.30, the President, H. BALDWIN, Esq., in the chair.

Minutes of the previous meeting were read and approved.

The following gentlemen signed the Obligation Book: Messrs. A. Collis, W. C. Pridham, R. P. Swannell, M. Philpots, F. Mordaunt, and were admitted as members by the President.

On Casual Communications being invited, Mr. A. LANDON WHITEHOUSE gave the history of an odontome (showing actual specimens and models) diagnosed by Mr. Baldwin, and subsequently removed from the patient (age 21) by Mr. Turner at the Hospital.

Mr. KITROW showed case of gemination in a girl aged thirteen of lower right central and lateral, the width of which was almost equal to combined width of corresponding normal teeth on the left; little division or depression was observable, and it was regarded as a case of complete gemination.

Mr. QUINTON showed several abnormal teeth, four rooted wisdoms, first upper bicuspid showing marked tendency to three roots, and a large wisdom having an awkwardly twisted root.

Mr. G. VINCENT showed a small upper supernumerary wisdom.

Mr. BALDWIN remarked on the tendency of upper wisdoms to be often too small, whilst lowers were quite as often too large.

Mr. PERKIN brought forward case of absence of canine in upper, with the presence of a third bicuspid; he also exhibited a lower wisdom having seven cusps.

Mr. H. BALDWIN then exhibited four upper bicuspid from the same jaw having two roots well developed, also models of child aged five having all temporaries in situ, but with well marked superior protrusion, plainly brought about by thumb-sucking, the lower teeth being much flattened, whilst the uppers were separated and well arched forward.

In the absence of Mr. W. H. Thomas, the President then called on Mr. S. C. SMITH to read his paper on "The Surgical Complications arising from Misplaced Teeth." A discussion followed in which Mr. A. Landon Whitehouse and Mr. H. Baldwin took part, the latter spoke of the thorough treatment cysts called for. A large opening was imperative, the aim being to destroy cyst wall thoroughly by scraping, packing, or suitable irrigation, and then to promote healthy granulation; with a small opening there was always the danger of inefficient treatment, with consequent sepsis leading perhaps to serious trouble. Mr. S. C. Smith briefly replied.

After announcing that the Annual Mechanical Evening would be held on October 24th, at 6 o'clock, the President brought the meeting to a close at 9 o'clock.

The Annual Mechanical Evening was held on Monday, October 24th, at 6 o'clock, Mr. H. BALDWIN presiding. The meeting was well attended, and some good demonstrations were given. Messrs. C. Ash & Sons had an interesting exhibit of special workroom appliances; those calling for notice being Young's perforators for use in backing teeth, Ash's solid rubber swager with press, for lining impressions, porcelain enamels for colouring teeth, high fusing bodies, and gum enamels, Dall's circular and irregular inlays with outfit, new diamond burs and discs, and Buttner's pivoting instruments with

platinum caps. The first demonstration on a method of working continuous gum work was given by Mr. W. E. Fletcher, who first explained the various methods of attaching the teeth to the platinum plate, exhibiting for the purpose a full upper ready for porcelain body ; showing the wavy platinum wire, bridging between teeth and plate, should be carefully bent so as to be readily soldered alternately to plate and pins of individual teeth ; the careful way in which this had been done was evident in the soldering of case. He proceeded to explain, and handed round zincs showing how the cast is made to turn up edge of plate. Mr. Fletcher next built up the porcelain body around teeth to complete their attachment to plate, successfully firing in Ash's gas continuous gum furnace. Although it was only possible in the limited time to give the second layer, enough was seen to afford a good demonstration of the subject, and the case will be finished in various stages as a specimen, and placed in the Society's museum.

Mr. ALFRED BEAUCHAMP, introduced by Mr. BALDWIN, next followed with a very practical demonstration on a subject of interest to all, that of hardening and tempering various dental instruments and appliances, including burs, excavators, enamel chisels and clamps ; using for the purpose of warming up an ordinary bat's wing gas burner, and quenching in liquids suitable to the purpose for which instruments were required. By using mercury to harden enamel chisels, an edge easily scratching glass was obtained. Mr. Beauchamp used sperm oil for hardening many instruments ; for clamps he demonstrated the process known as "blazing or flaring off," consisting of heating the article to be hardened in the flame, quenching in oil, and immediately placing over flame until the temperature of the article is raised to a point sufficient to cause the oil still adhering to its surface to ignite. Soft soaping was advised when instruments were heated in a crucible of red hot lead, to prevent the metal sticking to their surface, and the formation of scale.

Mr. W. DE C. PRIDEAUX demonstrated the use of an ingot holder and crucible combined. Held in the hand, any small quantity of gold up to about three ounces could be melted and cast for rolling ; the tilting being under the immediate control of the operator's wrist, and the whole easily heated by Fletcher's small automatic hand blowpipe.

After thanking the demonstrators and exhibitors, Mr. H. BALDWIN brought the meeting to a close, inviting those present to adjourn to the Café Florence to dinner ; about sixty accepted, including several members of the Hospital Staff.

Following the health of the Queen, proposed by Mr. BALDWIN, Mr. W. B. WOODHOUSE proposed the health of our President, thanking him on behalf of the Students' Society for his kind hospitality, and asking those present to show their appreciation by combining to make all meetings equally successful ; the toast was received with musical honours, and Mr. BALDWIN suitably replied.

The songs rendered by Messrs. Manning, Schlesinger and White were much appreciated, also Mr. Kittow's recitations, and altogether a most successful evening was spent.

DENTAL STUDENTS' SOCIETY OF IRELAND.

THE ordinary monthly meeting of the above Society was held in the Dental Hospital, Dublin, on Wednesday, Nov. 9th, at 8 p.m. Joseph Thomson, Esq., L.D.S.Ed., in the chair.

The HON. SECRETARY read the minutes of the previous meeting, which were confirmed, and also stated that since the last meeting he had received donations of £1 1s. each from Drs. Stack and Goldie towards the funds of the Society.

The CHAIRMAN then called upon Mr. Hayden for his paper on "The Preparation of Microscopic Sections." A discussion took place afterwards, in which Messrs. Blackwood, Andrews, Cockburn, Leventon, Rogers, and the Chairman joined, Mr. Hayden replying.

Mr. Leventon was then called upon by the CHAIRMAN for his paper on "The Extraction of Teeth," during which he showed some very interesting specimens. Messrs. Blackwood, Andrews, Cockburn, Harrison, Wood, Potter, Hayden and Pasley taking part in the discussion which followed, after Mr. Leventon had replied.

Mr. ROGERS also showed some specimens of dilacerated and other abnormal teeth, the meeting concluding after a hearty vote of thanks had been accorded to the Chairman for presiding.

THE DENTAL RECORD, LONDON: DEC. 1, 1898.

"HAGGIS."

THE simile used by Professor Gotch, speaking at the dinner of the National Dental Hospital, when he likened the examination for the diploma of L.D.S. to the Scottish national dish, seemed by the answering cheers to meet general approval. True, we must place it on record that a full-blooded Highland man, who was present, declared it to be the weak point in the speech; but we fancy the remark dated from his objection to Haggis being regarded as a "Hodge-podge" rather than from dislike to the curriculum and examination for the L.D.S. being compared to such. Nothing kills sooner than ridicule; but few witty similitudes bear the brunt of analysis. Leaving aside the fact that "Haggis" is regarded by a numerous folk as being the summit of culinary ambition, we may examine "the other end of the stick," and ask, if the L.D.S. is a mixture of many matters, is not this true of all examinations, indeed, of most things; and, if true, is it a serious objection? So far from its being an objection, Professor Gotch proposes to stir in two more ingredients—pathology and bacteriology, these being, we suppose, the salt and pepper which will give taste and pungency to the whole. Or should we have compared one of these to garlic? The Professor is obviously a devotee of French cookery, and, while keen on savoury dishes, is indifferent to the soundness of the stock from which his broth is prepared. For to anatomy he betrayed the antipathy peculiar we believe to all physiologists; and the laughter and cheers which answered his question "What connection there was between the ligaments of the foot and the teeth?" showed that many agreed that the dental student is taxed too far in this direction. But the implied suggestion that dental students are expected to be

familiar with such regions remote from the teeth is not in harmony with facts. Indeed, speaking with some knowledge of the extent of anatomical information of the ordinary student, we tremble to think of the kind of pass list which would result should such matters decide. It is true the student is expected to be signed up for twelve months' dissections, but it is absurd to ignore the fact that the interpretation of this stipulation is left to the medical schools, whose teachers are reasonably supposed to be familiar with the requirements of the dental students. It is true that owing to the dearth of material for dissection some may be given a leg to dissect when they first join, but it is well known that a man's first part is largely destroyed while he is learning to use the scalpel, so that it is not waste of time but a period of preparation. If the questions which are set in the papers by the different colleges be carefully studied it will be found that the questions—and these indicate the scope of the examination—are confined to the head and neck. It is true that students, usually those who are "spun," report having been asked some out-of-the-way questions, and though we may deprecate the vagaries of examiners, yet that such questions do not affect the result is well known to those who know anything about the matter. The Professor, we believe, is also of opinion that too extensive a knowledge of physiology is required. The Professor has probably not attended an examination, if he had listened to the majority of candidates he would probably be now amusing himself with the problem $O-X=?$ in which X shall stand for that which he proposes to eliminate. On the need of pathology and bacteriology being added to the dental student's curriculum we are in total agreement. Some attempt was made to get resolutions passed in favour of these additions when the recent alterations of the curriculum of the English College were sent for suggestions to the various dental schools, but there was a certain truth in the reason urged against this step, viz., that these matters would be included in the other

lectures, say of general and dental surgery. We do not agree with this for the same reason that so long a period of dissection is included in the curriculum, namely, that these subjects, like anatomy, to be learned at all must be learned practically, and the curriculum enforces no practical instruction. But it must not be forgotten that it is impossible to get a bushel of beans into a pint pot. First and foremost a dental student must learn the art of dentistry, and if other matters are needed to perfect his education, then further time must be given to his studies. The curriculum must require three instead of two years at hospital work. In the interest of the profession we believe the time is ripe to agitate this change.

The second subject-matter of the Professor's interesting and suggestive speech space does not permit us to examine in detail. It is a very vexed question. There are many reasons why the time may seem not yet ripe for instituting a higher dental diploma. There are many difficulties in formulating a scheme for such a diploma. Logically it would be difficult to increase the surgical side without insisting on some test of knowledge in general surgery, in short as a previous medical qualification, and this by no means coincides with the views of those who have previously urged the matter. A degree requiring a deeper knowledge of oral surgery, which gave no legal right to practise this, is absurd. If instead the subjects be enlarged in other directions, then it must require on a fuller knowledge of pathology, of bacteriology, of chemistry, of comparative anatomy, &c. The difficulties may not be insuperable, but they are great. On the other hand the inclusion of a dental faculty in the new teaching university of London would be an immense boon to us as a profession; and an earnest consideration of the question is demanded by the fact, that though it might be relatively easy to get a faculty included *ab initio*, once the scheme is formulated the difficulties of obtaining inclusion might be so great as to mean permanent exclusion.

News and Notes.

MR. ROBERT CHARLES DE LACEY, Newcastle-on-Tyne, registered dentist, having passed the necessary examination, has been granted the licence in dental surgery of the Royal College of Surgeons in Ireland.

THE *American Dental Weekly* is dead.

PHILADELPHIA is said to boast of 4,223 students of medicine and the allied sciences. Of these, 1,221 are students of dentistry.

RECENTLY a judge told a story of a man in evening dress who went to a hospital. As he left he asked for the contribution box and inserted a coin. It was afterwards found to be a threepenny piece ! We wish we could think that this story was unique.

PROFESSOR BROPHY is said to have performed his operation for cleft palate nearly 500 times without one death. It consists essentially in bringing together the margins of the osseous cleft by means of pressure, holding them in contact till union has occurred, and at a subsequent operation uniting the margins of the soft palate. It is performed soon after birth. Curiously it is stated by Mr. W. C. Barrett that if the operation be performed early enough, the superior jaw develops to normal size and the upper and lower deciduous teeth erupt in perfect occlusion.

INTERNATIONAL DENTAL CONGRESS, 1900.

IN consequence of an invitation addressed to the Ecole Odontotechnique by the Comité d'Initiative constituted by the Ecole Dentaire de Paris, a meeting took place on the premises of the last named school on June 26th. There were present 34 members, and divided as follows:—17 members representing the group of the Ecole Dentaire de Paris (five of them drawn from the Council of Directors of the Société de l'Ecole et du Dispensaire Dentaires de Paris ; four from the office of the Société d'Odontologie de Paris ;

eight from the province delegated by the Council of Directors of the Association Générale des Dentistes de France); 17 members representing the group of the Ecole Odontotechnique (five members drawn from the Council of Directors of the Société de l'Ecole Odontotechnique; four elected from the office of the Société Odontologique de France; eight from the province delegated by the Council of Directors of the Association Odontotechnique).

After M. Godon had explained the purpose of the meeting and given an account of the work of the Comité d'Initiative, the assembly decided to nominate a Provisional Committee of Organization, which was charged:—

1. To prepare a draft of the regulations;
2. To appeal to the French societies to appoint delegates, and each delegate representing 20 active members;
3. To communicate with professional societies abroad, asking them to appoint committees of organization in their respective countries;
4. To prepare for a general meeting of the delegates, to take place in March or July, 1899, in order to constitute the definite committee.

The Provisional Committee consists of:—*Honorary President*—M. Lecaudey. *President*—M. Ch. Godon. *Vice-Presidents*—Dr. Quendot; M. Ducourneau; Dr. Martin, of Lyons; M. Schwartz, of Nîmes. *Treasurer*—M. Viau. *General Secretary*—Dr. E. Sauvez. *Secretaries*—MM. Burt; D'Argent; Hivert; Dr. Maire; MM. Martinier; Liffre. *Assistant Treasurer*—M. Rodolphe.

(Signed) Dr. E. SAUVEZ.

For all information referring to this meeting, please apply Dr. E. Sauvez, 17, Rue de St. Petersburg, Paris.

THE NATIONAL DENTAL HOSPITAL.

THE Annual Dinner of the past and present students was held on the 18th ultimo at the Holborn Restaurant. Professor Francis Gotch, F.R.S., was in the chair, and was well supported by a large company, including many visitors. The toast of "The Queen" having been duly honoured, the CHAIRMAN proposed the "National Dental Hospital and College." The prosperity of a college, whether it was a dental college or any

other college, was perhaps in the eyes of a more or less ignorant public absolutely associated with the high standing of its teachers, but the thing for which it exists, its *raison d'être*, was the students, and it was with reference to student life he wished to speak. They might wonder what he, a comparatively young professor of physiology in a not comparatively young university—Oxford—could have to say about a dental student who did not exist there. He had not resided all his life at Oxford. It was his great privilege to have been Dean of University College, Liverpool, for five years, and while there he came across his friends the dental students. He thought there might have been ten dental students when he first went there ; the other day his successor, Professor Peterson, told him how the students had been increasing, and that there were now about seventy. Now this alteration seemed to him to have brought about two or three different things, it brought about the increased estimation in which their branch of surgery was held in the medical profession, in the second place it had brought an alteration in the character of the dental student on this subject which he wished to dwell. This University College at Liverpool was like all colleges, it was a big one, big not only in point of numbers, but also in point of interests. It had medical students, dental students, students of science, students of mechanics, technical students, students of hygiene, and lady students. Now among this group he thrust the dental students, one of whom was the best amateur violinist he had ever heard (the son of a well-known dental surgeon) another was a very good athlete, another good at amateur dramatic entertainments, so that these dental students, instead of being isolated persons, became marked out amongst a whole crowd of students. The thing had been a success. Of course he recognised that one element of the growth in the number of dental students was the demand the public made for real knowledge, this demand being based on their being less ignorant. At the same time, the growth of that one college which he personally knew was only in a small degree due to the fact that the Dean happened to be sympathetic ; it was largely due to the fact that the dental student was not only desirable, but an acquisition. It was in this way that he had tardily paid a public debt, and owing that debt he wished to repay it to what was not only a body of students, but a large number of the dental profession. He did not know whether they realised, he dared say they did not approve of the way in which he

had repaid them. What he proposed to do was to put himself in the position of a dental student. Should he have any grievances? Well, he would have grievances, but he would not mention them all. One of the grievances would be the subject of examinations. Of course, examinations were necessary evils, they all knew that if they knew nothing else. They were necessary because they were compelled by those who were stronger than they were. He was not very greatly in favour of the system of examination; he had himself examined for fifteen years, and no doubt there were many others present who had examined longer. It was very rare that a man who did not know his work passed one of these examinations, but on the other hand it was by no means rare that one who knew his work did not pass. He did not profess to say, however, how this was to be remedied. This subject might well command the greatest intellects they had, but they should always have their teaching represented on their examining board, and that was the point of a university. His grievance was separate examinations, he objected to the preliminary examination because it was not enough, and he maintained that with the rise of education in this country it was essential that every man in the profession should be thoroughly grounded in general culture. With respect to the final examination for the dental diploma, the only thing he could compare it with was a dish called "Haggis." He did not care for either, and the contents of each was an extraordinary jumble, and this jumble was forced upon the dental student upon entering by a curriculum. Take human anatomy, although intending to be only a dental surgeon, and not a full surgeon, the dental surgeon was compelled to dissect just as much as the man who was going to be a full surgeon. It was all very well to say that a good system of elementary medical science was wanted, but they had not got it in a system, they had got it in a mixture, which was copied from the medical examination, and hence a student painfully dissected the ligaments of a foot when he was only concerned in the anatomy of the head. He maintained he had plenty to do, but it was not to be done in the present curriculum. It was amazing to him that one of the most important subjects from the point of view of dental science should have been omitted from that curriculum—pathology. Why, the dentist was dealing with a natural incubator, and yet bacteriology was not included as such. If the examination was going to be made what he thought it should be made, they were

making too much of one subject, and too little of others. If he were a dental student he should have one other grievance, he should want an examination which did not exist. He was a student of ambitions, and his ambition was to get a first-class diploma, and he should like to know how he was going to get it. It could not be done, he wanted something better, or at any rate what would serve him better than the ordinary L.D.S., he wanted a university degree, not for dentistry, but for surgery, with a special knowledge of dental surgery. That was what he wanted, and what he could not have. The importance of dentistry in relation to the national health was a subject which had been thrust upon them by every succeeding Chairman at this dinner, and the public, as it became more intelligent, would insist upon the importance of dental surgery for public health. He lodged his complaint now, because at this particular moment all those who wished to exercise their opportunity had a chance—here was one of their chances, they had got a representative on the Medical Council. And they had a greater chance, there was the dawn of a new era, they had got a statutory commission, a commission that could make a university for London, and on that commission they had one who was not out of sympathy with them, Professor Michael Foster. He ventured, therefore, to hope that this National Dental Hospital and College would rise to what he considered to be its duty, a duty which it owed not merely to its students, not merely to the metropolis, but to the United Kingdom. He begged to give the toast of "The National Dental Hospital and College," coupled with the name of their Dean, Mr. Sidney Spokes.

The DEAN in responding said once more it became his duty to reply to the toast which had been proposed from the chair, and to speak on behalf of the members and staff of the hospital and college. The school he thought continued to be a flourishing one, the hospital, as a charitable institution, was also flourishing. There were changes which were taking place; perhaps one of them might just be alluded to, namely, the opening of their Mechanical Laboratory and Appliance Department, which was due to the altered curriculum of the College of Surgeons. One of the other points perhaps he might just touch upon, and that was the vexed question of pupilage in the Dental Hospital in order to provide a complete dental education, including the three years mechanical training, under the same roof. It was a point he would not dwell upon now,

but he mentioned it so that they might know what was being done, and let their opinions be known if they thought wise to do so, for however strongly one might feel that they had the right end of the stick, it was always worth while to hear what the man at the other end of the stick had to say. Referring to the points of the Chairman's speech, he said Professor Gotch did not know that the question of a first-class diploma was a very old one with them, and they had a very strong upholder for it in Mr. Campion. Some of them had thought that the diploma granted by the Royal College of Surgeons was the highest qualification that a dentist could expect, or if they wanted a larger qualification in dental surgery they might take the conjoint of the two colleges. He thought the Chairman, when speaking in connection with the new university for London, struck on good solid ground, and the fact that Professor Michael Foster, who had been their Chairman on a former occasion, was not unsympathetic, should encourage them to hope that this new university of London would make some provision for a university degree in dentistry. He hoped that some of the gentlemen who were with them would exert themselves to see what could be done. He would not detain them longer except to thank them once more for the way in which the toast had been received.

Dr. GADDES in proposing "The Past and Present Students," said the past students gave a status and an *éclat* to the college, and to-day the students of the past were occupying positions of distinction of varied kinds, as presidents of the branches of the B.D.A., or teachers in provincial schools. The college of Liverpool had three past National Dental students, and amongst other teachers they had past students on the staff of the National Dental College itself, gentlemen who were worthy of those who had preceded them, indeed still more worthy, and more capable, inasmuch as they had imbibed more than was imparted by their predecessors, and were abreast with the greater achievements of to-day. He need not refer specially to their amiable and distinguished Dean, who was so well known to them. National Dentals had always been characterized as hard-working fellows, some were more industrious than others, but that was only one of the phases of humanity from which National Dentals were not exempt. The present students had in their past colleagues and *confrères* noble examples to follow, and they had something higher to attain to, he thought, than those who had gone before them.

Those who had gone before took advantage to the full of the opportunities that were presented to them, but the students of the present generation had greater opportunities; and he had no doubt from what he saw at the hospital, and what he had heard, that they would sustain the prestige and honour of the college. He was very glad to hear the remarks of their distinguished Chairman on the subject of a university degree for dental students. It was not a new subject, the formation of a teaching university in London had been on the carpet for a good many years. Under the auspices of a university education, students could obtain degrees in Arts, Science, Divinity, Medicine, and so on. Why should not one of the most important specialties of medicine be recognised in relation to the forthcoming university? That, he thought, was a desideratum they should look to. If the university accorded a dental degree it would have a twofold result, it would meet the requirements of, and would enhance the profession in, the estimation of the public. It afforded him very great pleasure again after ten years to propose this most important toast, "The Past and Present Students of the National Dental Hospital and College." On this occasion he begged to couple with it the names of Mr. H. J. Relph and Mr. G. H. New.

Mr. RELPH and Mr. NEW suitably responded.

Mr. C. W. GLASSINGTON proposed "The Visitors," coupling with the toast the name of Mr. Tomes.

Mr. TOMES in reply said that the Dean had asked him to say a few words, and they should be very few. He felt himself in a little difficulty; if the dinner had been a week later, he might have said something as to the doings of the Medical Council. He thought all of them should be very grateful to their Chairman for having struck out on this occasion a line that was original. He had given them suggestions, and made criticisms that they had not heard before. The Chairman had told him in the course of dinner, before he rose, that he should offend him, but he had replied that they were always glad of candid criticisms, and more particularly to candid criticisms when they were perfectly friendly. He did not mean to say that he agreed wholly with Professor Gotch, but he did not intend at that stage of the proceedings—indeed it would ill become him as a visitor to set to work to criticise in detail the observations Professor Gotch had made. Although the Chairman deprecated examinations,

nevertheless they came at the end of the curriculum, and they were that to which the curriculum was intended to lead up, and he should like Professor Gotch, if he had the opportunity, to be present at one of the examinations of the College of Surgeons, and he thought he would find that his criticisms were met, that is to say, in the scope of the questions that were asked. A great deal was left out, and a great deal was taken in. He did not mean to say that that met the Chairman's criticism entirely, but if he went to the examination he would think a little better of it, and perhaps of most of the dental examinations. The only other answer he should like to make to Professor Gotch, was that whatever the faults of the curriculum might be, its practical results were exceedingly good. On the whole the educational standard adopted had proved a success by the quality of the men it had turned out. If he looked back to the students who had most distinguished themselves at the examinations, so far as they were known to him then, were the men who had come to the front afterwards. If the examinations had been misdirected, he ventured to think that that would not have been the case. In conclusion he thanked them for the manner in which they had received the toast of the visitors.

Mr. SPOKES proposed the health of the Chairman, which was duly responded to.

The musical programme was exceptionally good.

GENERAL MEDICAL COUNCIL.

DENTAL BUSINESS.

THE winter session of the General Council of Medical Education and Registration was opened on Tuesday, November 22nd, in the hall of the Council, Oxford Street, London. As usual, the President (Sir William Turner) opened the proceedings with an address. The following passage in the address is of interest to the dental profession:--"In the month of May, the Council appointed a committee, consisting of Mr. Tomes, Mr. Horsley, and myself, to take steps to induce the Government to insert a clause in the Companies Act Amendment Bill, with the object of preventing the registration of companies to carry on Medical, Surgical, and Dental Practices. A meeting of the committee, at which Mr. Muir

Mackenzie was present, was held early in October, when a discussion took place as to the best means to carry out the instruction of the Council. It was arranged that clauses should be drafted by Mr. Muir Mackenzie, and placed in the hands of the Lord Chancellor. This has accordingly been done. It is due to Mr. Tomes to state that he has taken an active and important part in bringing the whole of this question before the notice of the Lord Chancellor."

Tuesday, November 29th.

At this meeting of the Council, a special committee, consisting of the President (Sir William Turner), Mr. Tomes and Mr. Victor Horsley, presented a report on the subject of the registration of companies to carry on medical, surgical and dental practice.

In the report the committee said they were appointed at the May meeting in consequence of information brought before the council by Mr. Tichborne, that a drug company in Cork, registered under the Companies Acts, had intimated that one of its objects was to carry on the business of physicians and surgeons. It was also pointed out to the council that the encroachments on the practice of other professions and businesses, for the legal practice of which a personal qualification was necessary, were being conducted under cover of the Companies Acts. The attention of a departmental committee of the Board of Trade, sitting under the presidency of Lord Davey, had been called some time previously by the British Medical Association, the British Dental Association, the Medical Defence Union, the Royal College of Veterinary Surgeons, and the Pharmaceutical Society, to the nature of these infringements of professional acts, but that committee was of opinion that the matters complained of did not properly fall within the scope of the terms of the reference made to them by the Board of Trade. They expressed, however, in their report the hope that one of the clauses of the bill which they had drafted might have some effect in providing a remedy. The acknowledgment by a Government committee that a grievance existed was an important step gained, and the bodies named approached Lord Herschell with the view of obtaining his assistance in introducing an amendment in the Companies Act Amendment Bill, which was then being brought by the Government before the House of Lords. There was reason to believe that the Board of

Trade would not oppose Lord Herschell's amendment, but as the Government bill was shelved for a time by being referred to a select committee of the House of Lords, the matter has not been further proceeded with. The committee of the General Medical Council attempted, in the first instance, to prevail upon the Board of Trade to take up the question in its relations to the medical profession. A deputation consisting of Sir Dyce Duckworth, the senior treasurer (in the absence of the president from town), Mr. Horsley and Mr. Tomes, accompanied by Mr. Muir Mackenzie, waited upon the President of the Board of Trade, with whom was Mr. Smith, C.B., and submitted a memorial to him on the subject. Sir Wm. Priestley, M.P., was also present. Mr. Ritchie expressed himself in general terms as perfectly friendly to the objects of the deputation, but was of opinion that the remedy for the grievance complained of was to be found elsewhere than in the proposed Companies Bill, so that he was unwilling to take any step in the matter. Moreover, the chances of any Companies Act Amendment Bill becoming law within a reasonable length of time appeared uncertain, and it hence seemed to be expedient to make attempts in some other direction. Accordingly Sir Kenneth Muir Mackenzie, the private secretary to the Lord Chancellor, was waited upon and requested to lay a memorial, in substance much the same as that which had been submitted to the Board of Trade, before his Lordship.

Very shortly after this, on the occasion of a Pharmacy Bill, which had passed the House of Commons, coming before the House of Lords, the Lord Chancellor introduced an amendment which dealt with the question so far as pharmacy was concerned, and this amendment met with the support, in principle at all events, of Lord Herschell. But this Pharmacy Bill had passed by agreement through the House of Commons as a practically unopposed measure, and for that, and possibly other reasons, the amendment was withdrawn by the Lord Chancellor, who, however, intimated in withdrawing it, that the matter would be subsequently dealt with in another form. This committee were advised to have a draft of a bill prepared, which in their opinion would meet the difficulty in the case of the Medical and the Dentists' Acts, and they accordingly requested the standing counsel to the General Medical Council, Mr. Muir Mackenzie, to do this, in order that it might be submitted to the Lord Chancellor. This had now been done.

Mr. TOMES, in presenting the report to the council, and moving its adoption, said that a great deal of work had been done by interviews of an informal character, and he assured the council that very real progress had been made in the matter, and that the committee had every hope of a successful issue. It might possibly be a surprise to some members of the council that the committee had not printed the draft bill which had been presented to the Lord Chancellor. This question had been very carefully considered by the committee, who found there were a good many reasons for not printing the draft bill. In the first place, the council was not asked to promote the bill. The bill was only a suggestion placed before the Lord Chancellor to let him see what they thought would be effective for the purpose in view, and of course not a single word of it might be adopted by his lordship. Again, supposing they had printed it, they would have given an early opportunity to any opponents of the bill to start and organize their opposition. He might mention that the bill lay in the council's office open to the inspection of any of the members who might desire to see it, and indeed he invited members to inspect it, and to co-operate with the committee in pressing this subject upon the attention of Members of Parliament. In this matter they had to deal with a class of people who were trying all they knew and employing all the legal acumen they could get to evade the law, and, if they were to meet them at all, they must get a really stringent Act. If the committee were reappointed he assured the council they would use their best endeavours to get the bill passed. The evil complained of was still going on. Since approaching the Lord Chancellor three cases had come to his notice in which companies of this class had been formed—one a company formed by a man who had been successfully prosecuted and convicted under the Dentists' Act, and another—a company formed by certain ladies.

Mr. TICHORNE (Dublin) said he took a great deal of interest in this matter, and, while he approved of all that Mr. Tomes had said, he thought the council should know something about the draft bill before approving the report of the committee.

Sir WILLIAM THOMPSON (Dublin) submitted that the suggestions in the bill would have more force if they had been considered and approved by the whole council, and not merely by a committee of three of its members.

After some further discussion it was agreed to go into *camera* in order that Mr. Tomes might explain the nature of the draft bill.

On the readmission of strangers the president announced that the report of the committee had been approved.

The committee was reappointed and requested to continue its efforts for the improvement of the law on the subject of companies formed to carry on professional functions.

Thursday, December 1st.

PERSONATION OF PRACTITIONERS.

The PRESIDENT (Sir William Turner) intimated that while sitting *in camera* on the previous day the Council passed the following resolution, viz. :—"That the executive committee be instructed to report upon means to secure the identification of registered medical and dental practitioners, and to prevent fraudulent personation of such practitioners."

PRACTITIONERS BEFORE THE COURTS.

Mr. GEORGE BROWN moved :—"That in all cases where a person whose name is not on the Medical or Dental Register is charged with an offence before a public tribunal in England and Wales, and it is reported that the accused claims to be a medical practitioner or dentist, it be an instruction to the general registrar, or in the case of Scotland and Ireland the branch registrars, to write to the presiding official of that tribunal stating that the accused person is not a registered medical practitioner or dentist."

Mr. VICTOR HORSLEY seconded the motion.

The PRESIDENT asked how these matters were to be brought to the notice of the council.

Mr. HORSLEY replied that they might not be able to get at every case, but he felt sure they would reach very many, and be able to do some good.

Several members expressed sympathy with the purpose of the resolution, but felt that in the form proposed it would be found unworkable.

In deference to this expression of opinion, Mr. Brown withdrew the resolution, saying that he would bring it up in another form next session.

REPORT FROM THE DENTAL COMMITTEE.

On the motion of Mr. Tomes the Council received and entered on the minutes the following report from the dental committee in regard to certain cases referred to it, under Section 15 of the Dentists Act (1878), to ascertain the facts :—

REPORT.

(a) ON THE CASE OF EDWARD BROWNING.

The case of Edward Browning, who is complained of by J. Petrikovsky, a journalist, for covering, having been referred to them to ascertain the facts in regard to such case, the dental committee find the facts as follows :—

(i.) That Edward Browning was registered in the Dentists' Register on September 11, 1878, as having been in practice before July 22, 1878, and that his address in the Dentists' Register is 133, Oxford Street, London, W.

(ii.) That it is not proved to the satisfaction of the committee that the said Edward Browning does the acts complained of.

(b) ON THE CASE OF CHARLES JOHN DALTON.

The case of Charles John Dalton, who is complained of by Messrs. Marten and Little, L.D.S., for covering, having been referred to them to ascertain the fact in regard to such case, the dental committee find the facts to be as follows :—

(i.) That Charles John Dalton was registered in the Dentists' Register on September 13, 1878, as having been in practice before July 22, 1878, that his address in the Dentists' Register is 1, Scotch Street, Whitehaven.

(ii.) That the dental committee, having considered the circumstances, recommend that no further action be taken in the matter.

(c) ON THE CASE OF HENRY ROWTON.

The case of Henry Rowton, who is complained of by Mr. J. D. Price, M.R.C.S. Eng., for giving a death certificate, having been referred to them to ascertain the facts in regard to such case, the dental committee find the facts are as follows :—

(i.) That Henry Rowton was registered in the Dentists' Register on November 12, 1878, as having been in practice before July 22,

1878, in conjunction with pharmacy; that his address in the Dentists' Register is 109, Hall Street, Dudley, and that he is also registered in the Chemists' and Druggists' Register as in business before 1868.

(ii.) That the said Henry Rowton, on May 2, 1898, gave and signed a certificate of death in the terms following:—"This is to certify that Edward Fisher, aged 3 days, died on May 2/98. The cause of death—Debility from Birth Convulsions.—H. ROWTON."

(iii.) That on July 23, 1898, Mr. Rowton, having been asked by the solicitor of the Council to explain his conduct, wrote the following letter:—

"Dudley, *July 23*, 1898.

"Gentlemen,—I do not attend patients or pretend to be a medical man, the children were brought to my shop. I told them to get a note for the parish 'doctor' or one for the 'dispensary,' which I suppose they neglected doing—the so-called certificates were information for the 'registrar' which he has often sent them for.

"Yours truly,

"H. ROWTON."

Mr. Rowton did not appear, but a letter was read from his solicitor dated November 17, 1898, stating that his client undertook never again to issue any documents which could be considered to be medical certificates or to attend any patients as a medical practitioner.

(iv.) That the dental committee, having considered the circumstances, recommend that no further action be taken in the matter.

Mr. TOMES said that in the first case the committee found that it was not proved. That was strictly within the province of the committee, because under the Act the committee was qualified to find finally as to the facts. In the second case, the dental committee had a little exceeded its commission. The work that had been delegated to it now was new to the committee, and they had put in the paragraph recommending that no further action be taken in the matter that was not their province, but the province of this Council, and so he would ask the Council to forgive the dental committee for having in this, their first report and in new circumstances, exceeded their commission, and to amend this part of the report,

making it read "that it is not proved to the satisfaction of the committee that the said Charles John Dalton does the acts complained of."

Mr. BRUDENELL CARTER said that this did not quite bring out the facts.

Mr. TOMES explained that Dalton had written a letter saying that he had taken immediate steps to sever, and within a few days did sever himself from any connection with the town of Whitehaven, and that in fact he had given up the practice of dentistry altogether. In these circumstances it seemed futile to pursue the matter further.

Dr. MACALISTER moved that the Council having heard the explanation of Mr. Tomes with regard to the case, resolve to take no further action in the matter.

Dr. PETTIGREW seconded this motion, and it was at once adopted.

Mr. TOMES said that in the third case, Henry Rowton was complained of for giving a death certificate. This man came under the cognizance of this Council because he was registered in the Dentists' Register. In this case the committee found the case proved; indeed the facts were not denied, and the solicitor wrote stating that his client undertook never again to issue any documents which could be considered to be medical certificates or to attend any patients as a medical practitioner. Mr. Rowton insisted that he did not pretend to be a medical man.

The PRESIDENT said there was this difficulty, that the Council had never thought out any procedure with reference to the Dental Acts, because really these cases had been so very few, and their standing orders were not explicit as to what their procedure was to be. The question arose whether as dental cases were perhaps likely to occur more frequently now, there should not be a form of procedure.

Mr. TOMES said that in the letter Mr. Rowton explained that he was not a young man, that he had been ill and that he did not feel equal to come to London, and he assured the Council that all cause for complaint would be removed. Mr. Rowton also asked the solicitor to say that the people who were the objects of his interview were poor people indeed, and could not obtain medical assistance, and that the death certificate was not given as a medical certificate but only for the information of the Registrar.

Mr. BRYANT said it was clear that this was a case of frequent practising.

After further discussion, the Council agreed "That the further consideration of the charge found to be proved against Mr. Henry Rowton be adjourned till the next session of the Council."

COVERING AND THE ADMINISTRATION OF ANÆSTHETICS.

On the motion of Mr. Tomes there was received and entered on the minutes the following report from a committee consisting of the members of the dental committee, viz. :—The members of the dental committee have to report that at a meeting held by them on July 12, 1898, they gave their consideration to certain subjects that had been referred to them by the general council on May 31, 1898 (Minutes, vol. xxxv., pp. 116-118), and now submit to the Council the following recommendations at which they have arrived :—

(a) In regard to a communication from the British Dental Association as to the issue of a notice to dentists in regard to the employment of unqualified assistants, they adopted the following resolution :—"That the members of the dental committee recommend the general council to reissue to all persons on the Dentists' Register the notice of November 24, 1892, in regard to the practice of covering unqualified persons (Minutes, vol. xxix., p. 142)."

(b) In regard to a communication from the Dundee and District Branch of the British Medical Association as to the administration of anæsthetics by registered medical practitioners for unregistered dental practitioners, a practice which the Executive Committee has already characterised as, in its opinion, reprehensible, they adopted the following resolution :—"That the members of the dental committee agree with the opinion expressed by the Executive Committee that the practice referred to in Dr. Buist's letter is most reprehensible, and recommend that if a charge of covering, in connection with such administration of anæsthetics, were brought before the general council, it should be entertained and investigated."

Mr. TOMES said that it was asked that a covering notice should be issued in regard to the employment of unqualified assistants, similar to that which had been sent out to those on the Medical Register, and the committee recommended that the council reissue to all persons upon the Dentists' Register the notice of November 24,

1892, in regard to the practice of covering unqualified persons, which was very similar to that issued to those on the Medical Register. He moved that this recommendation be adopted by the Council.

MR. BRUDENELL CARTER seconded the motion.

DR. MACALISTER asked why the reissue was necessary.

MR. TOMES replied that there was good reason to understand from information which had come to hand when it was issued before, that the notice did a great deal of good, that it frightened a good many people out of the habits of covering, in which they had been indulging. They had seen that this had happened in the case of the covering notice to the medical practitioners, and it had been thought that it would have a good effect if this were issued to the dentists. Another point was that when one or two cases of covering had come before this Council in connection with dentists, it had been urged in extenuation or as a reason for not proceeding to any extremity, that the persons had not been warned in such a manner as to make them suppose that action being taken was imminent.

The recommendation was then adopted by the Council.

MR. TOMES, taking up the second recommendation in the report, said that a branch of the British Medical Association passed a resolution to the effect that action ought to be taken in the matter of registered medical practitioners favouring unregistered practitioners by administering anæsthetics for them. This had relation, as it was worded, to dentists only. The resolution was received by the Council and referred to this committee. He might say that he took means to inquire whether the practice was general—whether registered practitioners over the country did administer anæsthetics for unregistered dentists, and he combined with the inquiry for his own purposes an inquiry whether they did so for unregistered practitioners, such as bone-setters. He received a large number of answers. These went to show that the practice was exceedingly prevalent in the Midlands. He obtained answers from 25 towns where the medical practitioners were in the habit of giving anæsthetics for unregistered dentists. He found that in some instances the name of the registered medical practitioner was actually put up in the window of the unregistered dentist as giving anæsthetics for him. He learned incidentally that in a few cases they gave anæsthetics for bone-setters also. He got confidentially the names of 23 registered medical practitioners who were in the

habit, according to his informants' statements—and some of them offered to get positive evidence if it were needed—of administering anæsthetics for unregistered dental practitioners. He thought, therefore, there was very good cause for the Council adopting this recommendation. He had also talked to a number of the leading anæsthetists, and he found that the Society of Anæsthetists had avoided this subject as being rather dangerous ground, but among those to whom he had spoken there was the opinion that the thing was extremely wrong, and should be stigmatised and dealt with. He moved that the Council adopt the recommendation.

Dr. MACALISTER moved:—"That the reissue of the notice of November 24th, 1892, be delayed until it could be accompanied by a supplementary notice, to be framed by the legal adviser of the Council, in the sense of the foregoing resolution." That was to say, the resolution pertaining to the administration of anæsthetics.

Mr. HORSLEY seconded this motion, and the Council adopted it.

REPORT BY THE EXECUTIVE COMMITTEE.

On the motion of Mr. Brudenell Carter there was received and entered on the minutes the following report from the Executive Committee as to dental business transacted since the last session of the Council, pursuant to the following resolution passed on May 31, 1898:—"That the Executive Committee be empowered to receive and consider all applications and communications relating to dental business (other than matters pertaining to the dental committee) and to report thereupon to the Council." (Minutes, vol. xxxv., p. 118.)

REPORT.

The Executive Committee report that the following matters of dental business have been considered by them since the last session of the Council:—

(a) They received a report from the Registrar that—the prescribed conditions having been duly fulfilled in each case—the names of the undermentioned persons had been restored to the Dentists' Register, from which they had been erased in conformity with the provisions of Section 12 of the Dentists' Act, 1878:—Berdoe, Edward W.; Colyer, Arthur R.; Easton, James B.; Holm, William; Silani, Frederic L.

(b) They received and entered on their minutes the following communication from the Irish Branch Council in regard to dental registration :—

“ 35, Dawson Street, Dublin,

“ *October 18, 1898.*

“ Dear Sir,—At their meeting yesterday the Branch Medical Council directed me to forward you the following copy of a resolution passed by them :—‘ Resolved—That the local registrar shall keep a Dentists’ Register in accordance with Section xi., clause 5, of the Dentists’ Act, 1878.’

“ Faithfully yours,

“ H. E. ALLEN, Esq., LL.B.”

“ S. WESLEY WILSON.

whereupon it was resolved “ That this communication be remitted to the legal advisers of the Council with a view to obtaining their opinion on this question.”

(c) They received and entered on their minutes the following communication from the Royal College of Surgeons of England in regard to the recommendations of the General Council as to dental education :—

“ Royal College of Surgeons of England,

“ Lincoln’s Inn Fields,

“ London, W.C.,

“ *August 5, 1898.*

“ Dear Sir,—In reference to your letter of June 8, enclosing copies of the recommendations of the General Medical Council respecting dental education and examination, I beg to inform you that the recommendations have been referred by the council of this college to the board of examiners in dental surgery for consideration.

“ Yours faithfully,

“ SIBERT COWELL,

“ H. E. ALLEN, Esq.”

“ *Assistant Secretary.*

(d) They received an application from Ernest Harold Christopher Bailey, of Ballarat, Victoria, Australia, registered as a dentist in that colony, that he might be registered as a colonial dentist under Section 10 of the Dentists Act, on the ground that he had passed the qualifying examination of the Dental Board of Victoria in accordance with the provisions of the Colonial Dentists Act 1887.

In support of his application he produced a copy of the Act, his colonial registration certificate dated May 28, 1897, the (Colonial)

Dentists' Register, and the Regulations, which would appear to be based on those of the General Medical Council.

They also had before them a letter from Mr. Tomes in regard to this application, whereupon they resolved :—"That the executive committee, having considered the application of Ernest Harold Christopher Bailey, of Ballarat, Victoria, Australia, to be registered as a colonial dentist, and being of opinion that the certificate of qualification produced by the applicant may be properly recognised by the Council as satisfying the requirements of Sections 8 and 10 of the Dentists Act, recommend that the application be granted by the Council."

Mr. BRUDENELL CARTER said with regard to item *b* in the report, the opinion of the legal advisers was that the Irish branch council were exceeding their powers.

Mr. TOMES, in moving that the application of Mr. Bailey be acceded to, said that after carefully going through all the papers, he found that the curriculum and the lines of examination were exactly modelled upon those which obtain in this country, and unless the clause in the Dentists Act which allowed them to register certain foreign and colonial diplomas was to be a dead letter, this application could not logically be refused. This, he might say, was the first case of the kind.

Dr. MACALISTER said it would interest members to know that this was really the opening of the colonial test.

The motion was adopted by the Council.

This was all the dental business of the session.

Obituary.

CHARLES LEE ALLNUTT, L.D.S.Glas.

WE regret to announce the untimely death of this gentleman, which took place at Cape Town, S. Africa, on the 19th ult. A younger son of the Rev. R. L. Allnutt, of Under River Vicarage, Sevenoaks, Kent, and at one time one of the most popular students at the National Dental Hospital, he very soon made it evident that his heart was set upon acquiring fame in the dental profession. Owing to indifferent health he was advised to avail himself of the more congenial climate of S. Africa, where he became assistant to a well-known firm in the Colony, and in two years he returned to England to take the L.D.S. diploma. The many friends he made

drew him back to his new home, and unassisted he built up the large and lucrative practice which must now pass into other hands. A large number of friends and patients will deeply mourn over the loss they have sustained in the death of this high-spirited and good-natured *bon*, for boy he always was, wit and anecdote were ever his and his friends' delight, never for one moment were the trials of life betrayed to those around him; but alas! trials and affliction were not spared him, and like the well-known Grimaldi, he had two lives. Marrying young he acquired a large family, and his devotion to his wife and children revealed to him the necessity of obtaining an adequate income; slowly but surely his health broke down under the incessant strain of his practice, ending with cerebral hæmorrhage, which all the skill of the colony could not alleviate, thus ending the life of this promising member of our profession at the age of thirty.

Review.

L'ART DENTAIRE EN MÉDECINE LÉGALE, par M. le Professeur le Dr. OSCAR AMOËDO, Professeur à l'École Odontotechnique de Paris. Paris : Masson et Cie, Editeurs. 1898.

It would be a difficult matter to discover in France at the present time a man more suited for the task of compiling a work on Dental Art and its Relation to the Law as applied to Medicine than Dr. Oscar Amoëdo, the author of the handsome volume before us. A profound knowledge of dental surgery and pathology, coupled with an extensive experience of legal medicine, a unique connection with the identification, by means of their teeth, of the victims of the Charity Bazaar catastrophe in Paris in 1897, together with much patient research and collation of materials, have placed the writer on an unassailable pinnacle, where he can safely assume the toga of self-dependency and self-assertion.

We have nothing but praise for this, the latest production of the French press. A monumental work—it will be handed down to posterity as a classic on the special subject which it embraces. It is complete in every particular; nothing seems to have been omitted; everything has been done thoroughly, almost too thoroughly, we think, in some respects. In his desire for *l'abondance*, he has given

us more than we want. The opening chapters, covering 180 pages, and dealing with Dental Anatomy, macroscopical as well as microscopical, regular as well as irregular, chronological as well as mensurable, and the article on different racial peculiarities, might, perhaps, have been with advantage left out. They represent a short but withal succinct résumé of the recent contributions of numerous writers to dental literature, but exhibit no traces of originality, either in matter or in method of treatment. But we are not complaining; for the remaining 420 pages are filled with novel and original ideas and descriptions, of which we, on this side of the Channel, possess but little similar.

Let the reader glance at some of the subjects handled so deftly by the writer. They include accurate accounts of the teeth of idiots, dwarfs, convicts (*des criminels*), teeth of persons suffering from infectious diseases, diabetes, rickets, locomotor ataxy, syphilis, etc.; the traumatic and chemical lesions associated with various occupations and professions, such as shoemakers, glass-blowers, players on musical wind instruments, workers in chemical factories and the like. Then follow chapters on dislocations and fractures of the teeth, on the bites inflicted on man by man and by animals, on the wearing down (*morsure*) of the dental organs, and their post-mortem changes. From the paragraphs on dental caries we gather that cider drinking, at any rate in Normandy (*le pays du cidre*), cannot be considered to be a predisposing or exciting cause. For "*les dents sont bonnes en Bretagne*," where "*la consommation du cidre est aussi abondante*." Further, we learn that meat diet has but little, if anything, to do with its etiology. Prunier-Bey, Galippe, Chervin, are cited as furnishing statistics which do not emphasise this point; the latter drawing his deductions from the fact that spinal caries (*gibbosité*) and dental decay, because of the lack of quality in their lime salts, go hand-in-hand in a great number of the départements. But their arguments are disproved by Bevan, Boudin, Martin and Etchepareborda, who show that in the Argentine Republic and La Plata, where the diet is nearly exclusively carnivorous, caries is not more frequent than elsewhere.

The most valuable, original, and useful portion of the book is now entered upon by the author, viz., the law from a dental point of view. Under the heading of "Dental Jurisprudence" he discusses with much clearness and broadmindedness the dentist-

expert, accidents occurring during extraction, anæsthetics used in dental surgery, infectious diseases communicable by the dental surgeon, and the identification of dead bodies by the aid of the dental surgeon. These are all treated in a most forcible manner, and with a power that appeals in a moment to the reader. To take at random an instance: when speaking of general anæsthesia he puts into the mouth of the imaginary judge these, among other, questions:—"Did the operation justify the use of a general anæsthetic?" "Was the operator legally authorised to practise anæsthesia?" "Has the dentist given proof that he possesses the knowledge required for the administration of general anæsthetics, and does he know their contra-indications?" And he concludes his remarks by quoting Professor Poirier on the subject of hypnotism (p. 407):—"J'étais interne du Prof. Charcot, lors de la renaissance de l'hypnotisme. Je pus donc me familiariser avec ce phénomène, et je vous conseille *de ne pas même en parler à vos malades.*" Each point is carefully examined—each argument clinched with an emphasis which is strong in the strength of being just, reasonable and convincing.

An interesting chapter then ensues on Notation. Here are reproduced some of the various charts of the mouth used by dental surgeons in London, Vienna, Leipsig, Copenhagen, Paris, Zurich, Milan, etc., many of them possessing singular degrees of ingenuity.

The completest and most important series of observations on the identity of bodies by means of the teeth that we have met with occupies the following 110 pages, and consists of 52 separate cases, including such interesting historical personages as the Prince Imperial, Napoleon I., Louis XVII., William II. of England, and the ill-fated Duchess d'Alençon. An exhaustive Bibliography and Index close the book.

Much more might be written about this volume had space permitted. The author has aimed at an almost impossible task—"prendre la lune avec les dents," we might say—but he has succeeded. We can only conclude by offering to Dr. Amoëdo our hearty congratulations and sincere admiration for the extraordinarily interesting, instructive, and excellent treatise he has given to the dental world, and express the hope that it will be widely read by English dental surgeons, who are ever ready to hold out a welcoming and encouraging hand to their enlightened confrères across the water.

7 DAYS

THIS BOOK MAY BE KEPT FOR
7 DAYS ONLY
IT CANNOT BE RENEWED

BINDING LIST OCT 15 1927

H.R. Abbott
Mem. Lib.

Author

Title The Dental Record, 1898.

University of Toronto
Library

DO NOT
REMOVE
THE
CARD
FROM
THIS
POCKET

Acme Library Card Pocket
Under Pat "Ref. Index File"
Made by LIBRARY BUREAU

